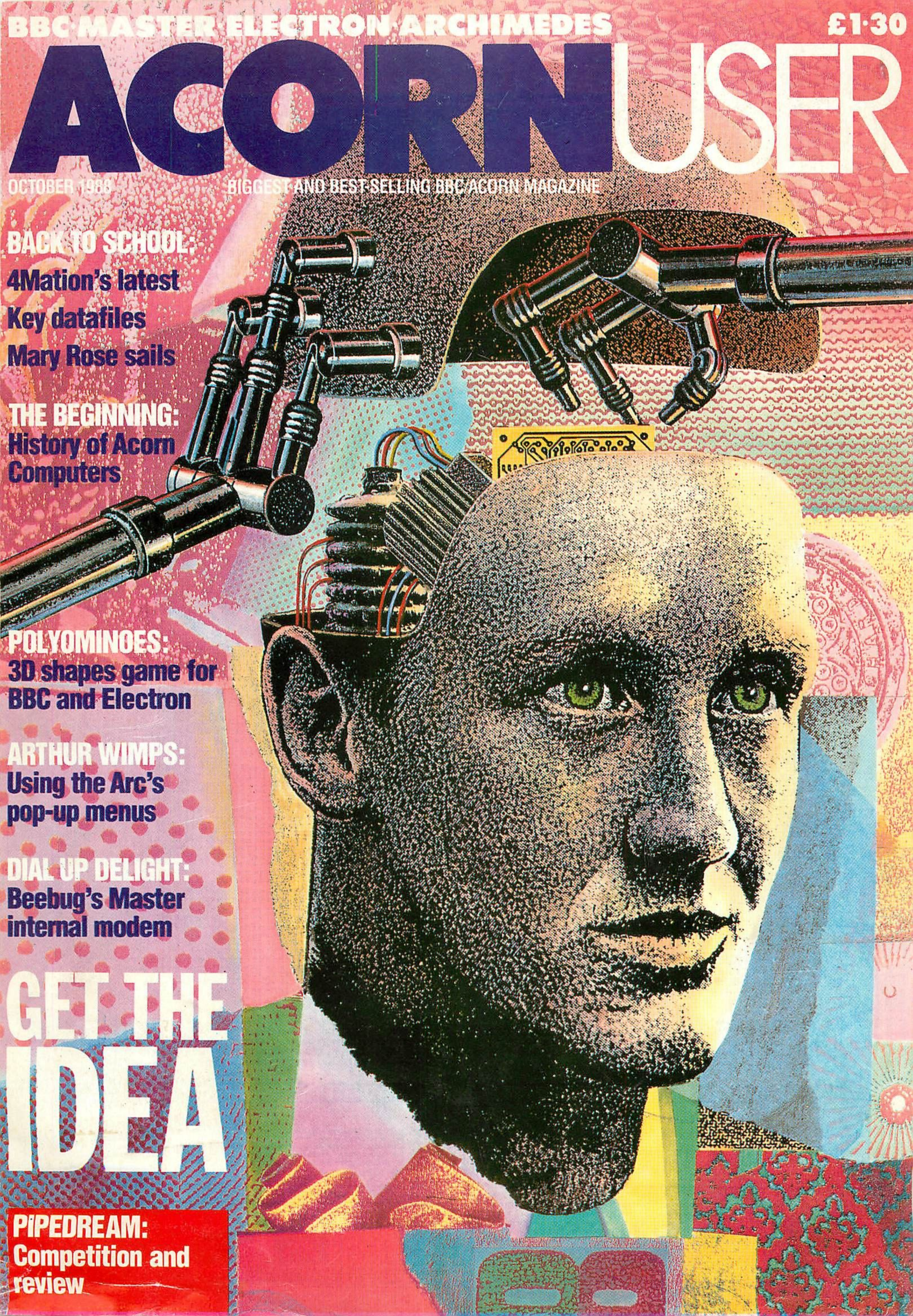


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OCTOBER 1988
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4Mation's latest
Key datafiles
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History of Acorn Computers
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Using the Arc's pop-up menus
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Beebug's Master internal modem
GET THE IDEA
PIPEDREAM:
Competition and review

KEY SOFTWARE

FROM MERCURY EDUCATIONAL PRODUCTS

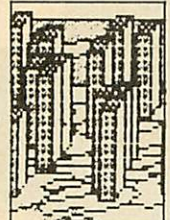
With a growing range of expertly conceived and skilfully programmed products from some of the leading ITV companies, Mercury Educational Products are now firmly established as a major distributor of software suitable for use in schools. The software covers a wide range of subjects, including Biology, Chemistry, Environmental Studies, Geography and Statistics.

DATA FILES FOR KEY

The following data files, designed to run on the ITV data handling package, KEY, are all available from Mercury Educational Products.

FROM GRANADA ▶▶▶▶▶▶▶▶▶▶▶▶▶▶▶

PLACE AND PEOPLE CITIES FILE



A KEY data file containing 1981 census data for eight major cities of Great Britain. These are Birmingham, Bristol, Cardiff, Glasgow, Leeds, London, Manchester and Newcastle-upon-Tyne. 32 fields are included, ranging from raw population statistics to socio-economic indicators such as home and car ownership, unemployment and social class.

Age range: Secondary
BBC B/MASTER 128 £9.95 plus VAT

FROM ANGLIA TV ▶▶▶▶▶▶▶▶▶▶▶▶▶▶▶

MAMMALS OF BRITAIN AND IRELAND



This extensive data file gives information on 95 species of mammal found in the British Isles. Graphics are included and an additional program gives the distribution of the mammals. A 'Mammals' book accompanies the pack.

Age range: Primary/Secondary
BBC B/MASTER 128 £15 inc VAT
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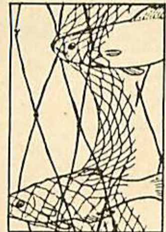
BIRDS OF BRITAIN AND IRELAND



237 species are included in this file. A book with many photocopiable pages accompanies the disc, and a further program gives information on distribution of species.

Age range: Primary/Secondary
BBC B/MASTER 128 £15 inc VAT
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SEAFISH OF BRITAIN AND IRELAND



This pack gives the latest information available on the structure and behaviour of commercially-fished species found around the British Isles, catching methods and statistics, and a photocopiable 'Fish' book.

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RM NIMBUS £17.25 inc VAT

AIRCRAFT



These data files give extensive information on today's aircraft, including helicopters. The files include information on civil and military machines.

Age range: Primary/Secondary
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RM NIMBUS £9.75 inc VAT

KEY-RELATED SOFTWARE PACKS

MAIL ORDER and FIT TO EAT include, free of charge, the ITV KEY disc. Users wishing to explore the further uses of KEY may purchase the manual from the ITV Association.

FROM GRANADA ▶▶▶▶▶▶▶▶▶▶▶▶▶▶

MAIL ORDER

This software is designed to enable pupils to create and control their own mail order catalogues, giving an insight into the decisions to be made about purchasing, pricing and selling goods. The aim of the exercise is to create a mail order catalogue and to operate it at a profit, using the class members as the potential customers.

Age range: 9-13 years
BBC B/MASTER 128 £19.90 inc VAT

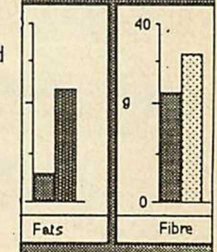
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.75	98.25	33
.99	94.95	32
.49	10.98	3
.99	119.97	41
.75	305.25	10

FROM SCOTTISH TV ▶▶▶▶▶▶▶▶▶▶▶▶▶

FIT TO EAT

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Age range: Secondary
BBC B/MASTER 128 £18.40 inc VAT



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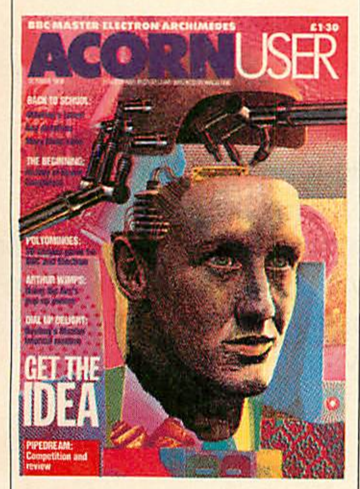
*Including name of school where applicable

ABCDE

ACORNUSER

ISSUE No 75 OCTOBER 1988

COVER



COVER FEATURE

Joe Telford's Ideas Processor, pages 58 to 63
Cover by Simon Fell

EDITORIAL

'The Load icon is the disc with a wavy arrow pointing away to the left', says the manual.

Manuals are a source of continual problems. The difficulty in understanding printer manuals is legendary, but they are complex machines. For the technically-minded, today's printer documentation is much better, and has all the information you will need.

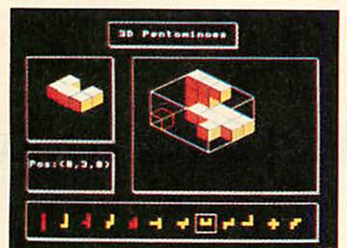
But software manuals still leave something to be desired. As applications are supposedly getting easier to use, manuals need to be simpler – as computers emerge as an everyday tool, they need to be less daunting.

Today's graphically controlled software needs clear, simple instructions, and you can't do this easily without pictures. Too many recent manuals have been thorough, but dull reading, unrelieved by illustration.

How easy it would be to print a picture of the icon.

NEWS

FEATURES



REVIEWS



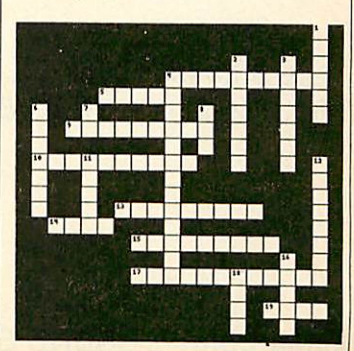
EDUCATION

REGULARS

NEXT MONTH

Joe Telford becomes a crossword puzzle addict, plus we have more on the history of Acorn, Life in one dimension, and swapping data between wordprocessors.

We review *Autosketch* and *Technocad*, plus *Snatch* and *Chairman of the Board*. And you can win one of three wide carriage printers



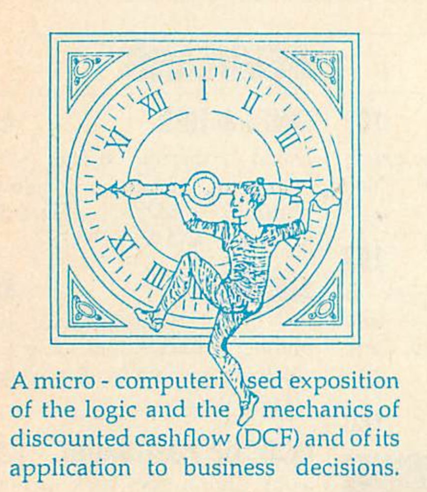
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NEWS

News in brief

■ Archimedes computers have been put out to sea by the Royal Squadron Yacht Club.

The Royal Club used the Arcs to estimate race timings for over 700 boats competing at the International Cowes Regatta on the Isle of Wight.

Yacht Race Course, developed by Computer Tutorial Services on the isle of Wight, records the weather, tide and class of boat entered and gives an estimated finishing time.

■ Number One Systems has released a printed circuit board designer called *Easy-PC.* Although it was designed for the IBM PC, the new Arc version runs much faster in 'native' mode. It can deal with boards up to 17-in square, has a library of component shapes, and costs £316.25.

■ A sophisticated bulletin board software package for the BBC B, Master and Compact has been written by Orion Computer Services.

The package costs £35 and allows callers to ring and leave messages, download software, look at text files, and use online programs. It is available from OCS, 17 Carlton Road, Leyland, Preston, PR5 1LP.

■ German company Digitale Illustrationen has released an Arc database. *DOC* stands for Database, Organisation and Charts. Using it you can work with 7,000 addresses in memory on a 310. It is written in three languages: French, German and English. It costs 150 German marks (about £50) from Digitale Illustrationen, Rahtenauplatz 24, D-5000 Koeln 1, Germany.

■ ESM has produced an extension package for users of *Supastore.* The *Plus* version (£63.25) has an extra range of uses and a utility to design layouts.

Euro-database to use Arcs

A European-wide information database for television producers is being set up by the BBC using a network of Arcs.

Tvtel will hold information on all educational programmes produced in Europe in the last three years. It is the brainchild of the European Broadcasting Union which contains all the major television companies in Western Europe. Each member state is paying £3000 towards the project.

The central database for the system will be the BBC's Open University production centre in Milton Keynes. They will be responsible for linking all member nations through telephone lines. The aim is to produce a directory of information on new and past programmes, audience target, subject matter and a list of contacts. A synopsis of the programme will also be included.



The Beeb is behind Tvtel

Tvtel also hopes to help production, reduce costs and strengthen European links.

A producer could type into his viewdata terminal, which could be a BBC with a modem, and access, the Arc host network system in the UK. He would then be able to search through the Prestel-like directory system.

Alex Gray, systems manager of Tvtel said: 'The idea is to allow educational producers to see what's been done in the past and what sort of programmes need doing.'

The system is planned to be in use within two months. For the first two years a pilot scheme will operate, only storing information on language and technology programmes. If it is successful then the BBC hopes to expand. The bulk of the text will be in English but information will also be available in French and German.

Tvtel will provide a quick and simple means of communication for colleagues in any member organisation, through electronic mail and bulletin board facilities. Some Eastern bloc countries, as well as America and Israel, have also shown considerable interest in the system.

Subsidy fears

Fears that £1m of government money from a schools subsidy scheme will be wasted on buying American software or poorly-converted BBC programs have been voiced by some of the major software publishers.

The Department of Trade scheme is to be announced this term but is understood to be limited to 16- and 32-bit software, which would exclude BBC B and Master programs.

Software houses such as 4Mation and Resource pressed the government last year for money to help develop programs. However, the reaction amongst BBC publishers, who represent the backbone of the education industry, is that the DTI scheme gives too little notice. They point out that good programs take a year to develop. Further, schools may have to spend the cash by the end of January.

This means that to get a slice of the cash, companies may be forced to do hasty conversions for the Arc, which fail to use the power of the machine.

The scheme is expected to match every school pound spent with 40p.

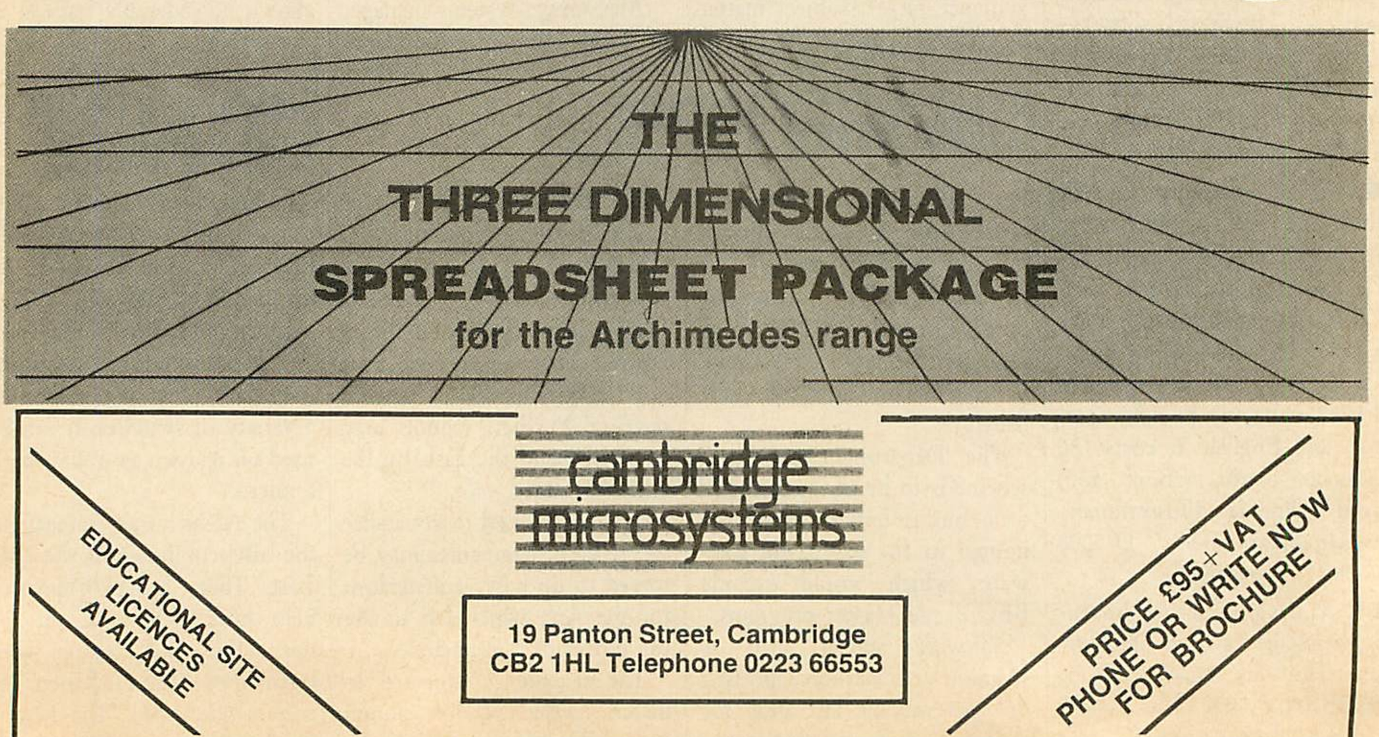
Keyboard helps more disabled

An alternative keyboard which can be used even by severely disabled children has been developed by Toucan Communication Aids of Crewe.

The Learning Tray uses scanning light which is operated by a variety of switches. It can be used on its own as well as with a micro.

The A3-size tray connects to the BBC computer via the User Port. There are programs to help those with visual difficulties, adults and children with learning problems and the mentally handicapped. The Learning Tray costs £488.75.

MATRIX-3


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Anglia hosts TV reporters

by Christina Neal

Children from four Norfolk schools became television news reporters for a week last term. The lucky students were given the golden opportunity to see their stories displayed on screen, thanks to Anglia TV's Oracle teletext service.

Anglia's education officer, Peter Stibbons, explained there was an international slant to many stories: 'Schools asked parents who travelled to get their firms to accept or return a fax and we got quite involved with local radio stations and with Peru and New Zealand.'

Students were already familiar with computers from their schools, said Stibbons, and used a teletext editing package from MB Software to enter their pages onto Oracle from BBC micros. They worked in the newsroom with presenters Alistair Yates and Malcolm Allsop, taking stories from their screens and sending some to their schools to put into school newspapers.

Oracle carried 10 pages of school news instead of the usual three, including news on a school environmental project and the story of the New Zealand school which had reported an earthquake.

Anglia hopes to repeat the idea with other schools.



Peter Stibbons of Anglia TV with some young budding reporters

Computer knitting

Knitting has moved into the computer age with a package that allows designs created on-screen to be made up without having to use pattern cards.

Masterknit 200 from Clwyd Technics has been produced for the Knitmaster range of knitting machines. A special feature is the garment design unit which allows sizes to be programmed into the computer.

Revealed: secrets of the PC Show

Desktop publishing will feature on Acorn's stand at the Personal Computer Show this month.

A new package for the Archimedes will be previewed at the show, and released around the end of the year, though Acorn is reluctant to give details.

Those more willing to reveal their secrets included Superior, who will be releasing *Pipeline*, a BBC game set on a planet ravaged by fire. A compilation of four titles, *Play it Again Sam III*, will also be on display.

Packages for the office include a new integrated office system from Computer Concepts based around the Archimedes RISC chips. *Equinox*, consists of a host PC, two expansion cards, which plug into the PC, a laser printer and a document scanner. The aim is to cut out duplication in existing office equipment and provide a fully integrated system (see *AU* September).

Minerva will be launching an ancestory package for the Arc with extra features to liven up history lessons. These include zoom capabilities to read family histories at a closer range and digitised pictures of past kings and queens of England.

Minerva's *Gamma Plot*, with graphic, chart and a full 256 art package included, will be on show. *Freddy's Folly* and *Orion* are two games being released, bringing Minerva's total of Arc games to five.

A new and simpler database will be available from Mitre. *Flystart II* is compatible with IBM PCs, Master 512s and Arcs. Mitre is also launching an Arc desktop enhancer, designed to add extra functions to the Arc environment, including directory searches.

Electronic Music Research will be launching a host of packages including *Studio24 Plus*, a recording package for Arcs at £99. Another is the *Midi Drummer* which lets you program drum patterns on screen and then load them onto the performer. Another program designed specifically for handicapped people is called *Handimusic*.

A *Creations* disc for *Soundsynth* allows you to add 16 and-18 bit sample sounds. And a sequencer can play back up to eight sounds on the music staves. This costs £29.95.

A 16-bit sound sampler with all the supplements is being launched by Armadillo.

The show runs from September 14 to 18 in Earls Court.

Primary maths by Logotron

Logotron is to follow up the success of Logo and the *Pendown* wordprocessor with a maths package called *Numerator* for the BBC and Arc.

Chris Roper of Logotron said he believed it would do for maths what Logo turtle graphics did for geometry.

Numerator allows mathematical systems to be modelled using three components. These are 'tanks' which hold numbers; 'boxes' for addition, subtraction and so on and 'pipes' which link the parts together.

The results in tanks can be tagged with 'x' and 'y' so they can be automatically plotted on a graph or bar chart. These can be plotted by just pressing CTRL-G or CTRL-B.

Once a system has been developed and tested, it can be used in another system as a 'module' in a process similar to a procedure in programming.

Input can be accepted from the BBC's analogue port, to feed into a system, for example to plot a cooling curve from a thermometer.

Numerator on the BBC B and Master will cost £34 plus VAT, and £200 extra for a network licence.







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Taxan KX1202 Green(p.39)	68.70	79.00
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Microvitec 1451	221.74	255.00
Microvitec 1451 Ap	260.00	299.00

(Prices inc. BBC Cable)

MASTER/ARCH

	Ex VAT	Inc VAT
Master 128K Micro	365.22	420.00
Archimedes 305 from	699.00	803.35
512 Co-processor	90.00	103.50
Turbo Upgrade	98.78	113.50
Acorn Cartridges	10.87	12.50
Care Cartridges from	8.65	9.95
View 3/View Sheet guides	9.00	9.00
Reference Manuals	14.00	14.00
Master & BBC Dust Covers	3.00	3.45

Second user BBC Bs available
Phone for details

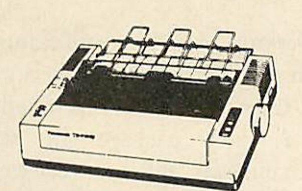
PHILIPS CM8833

with BBC cable
£249.00 (£216.52 + VAT)

VOLTMACE JOYSTICKS

	Exc VAT	Inc VAT
Delta 14B single	11.26	12.95
Delta 3B single	9.52	10.95
Delta 3B twin	15.61	17.95

PANASONIC KXP 1081



with BBC cable & paper
£159.00 (£138.26 + VAT)
with Screen Dump 2m cable and paper
£165.00 (£143.48 + VAT)

	Exc VAT	Inc VAT
KXP 1080 Fabric ink ribbon	4.26	4.90
KXP 1080 View Printer driver	7.83	9.00
KXP 1080 Control Dump rom	13.00	14.95

PANASONIC KXP1082

(as 1081 but 160cps)
with BBC cable & paper
£189.00 (£164.35+VAT)

KAGA/TAXAN KP815

with BBC cable & paper
£179.00 (£155.65 + VAT)

CANON PW1080A

with BBC cable & paper
£179.00 (£155.65+VAT)

STAR LC10

with BBC cable & paper
£189.00 (£164.35+VAT)

STAR LC10 COLOUR

with BBC cable & paper
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EPSON LX800

with BBC cable & paper
£229.00 (£199.13+VAT)

CITIZEN 120D

with BBC cable & paper
£135.00 (£117.89+VAT)

EPSON LQ500

with BBC cable & paper
£325.00 (£282.61+VAT)

JUKI 6100

with BBC cable & paper
£285.00 (£247.83+VAT)

MP 480 (480 cps)

with BBC cable & paper
£299.00 (£260.00 + VAT)

Amstrad LQ3500 (24)

with BBC cable & paper
£285.00 (£249.83+VAT)

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	Exc VAT	Inc VAT
LX/FX 800 Print Ribbon	3.00	3.45
LX-80 Print Ribbon	3.00	3.45
NL-10 Print Ribbon	4.80	5.52
LC-10 Print Ribbon	4.00	4.60
120D Print Ribbon	4.00	4.60
KP/PW Print Ribbon	3.39	3.90
Juki 6100 Print Ribbon	1.30	1.50

Phone for quantity discounts

PRINTERS/CABLES/ETC.

	Exc VAT	Inc VAT
Panasonic KSP3131 Daisy	233.91	299.00
Epson FX1000	400.00	460.00
Epson FX800	313.04	360.00
1.5m (4 foot) BBC Cable	5.70	6.50
2.0m (6 foot)	7.74	8.90
Compact printer cable	7.74	8.90
IBM/Archimedes cable	6.00	6.90
LX800 Sheet Feeder	62.61	72.00
LC10 Sheet Feeder	56.52	65.00
NL10 Sheet Feeder	47.83	55.00
6100 Sheet Feeder	188.70	217.00
Printer Dust Covers	4.00	4.60

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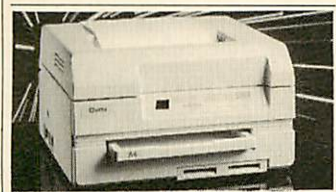
**Acorn Dept.
128 West Street,
Portchester,
Hants.
PO16 9XE.
Tel: 0705 325354**

Will it rain?

Budding weather forecasters will now be able to predict the number of rainy days in a British summer with the Meteorology Data Pack from Longman.

Aimed at secondary schools, it contains weather maps, satellite pictures and information on fronts and depressions.

The pack costs £57.50, or £72.50 for a network version.

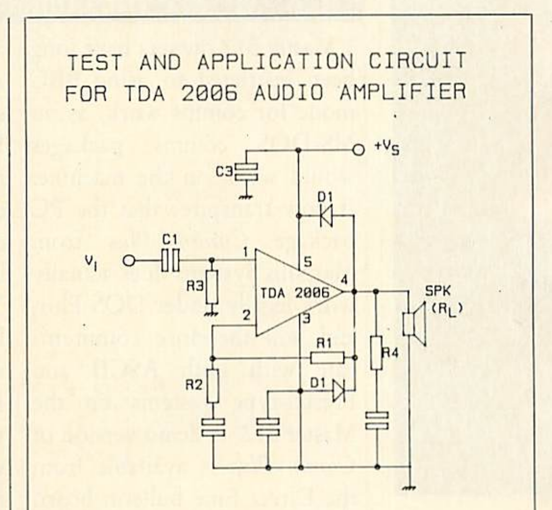

Provides fast and quiet printing

Liquid solution

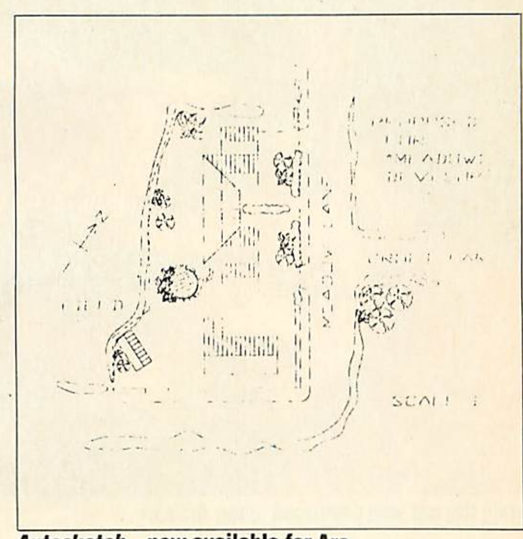
A page printer that uses liquid crystal as an alternative to laser image technology has been launched by Qume. The Crystal Print WP costs £995, and the Series II version costs £1,495.

It's a yuppy world

An Archimedes version of *Faxfile Organiser* which helps design forms and Filofax pages has been produced by Mewsoft. It costs £23.95.



Technocad – easier to use with pop-up menus


Autosketch – now available for Arc

Design takes off

Technical drawing and design on BBC machines has been boosted by the launch of software for the Master and Archimedes. Technomatic has launched *Technocad*, and Autodesk has released the Arc version of *Autosketch*.

Technocad comes in a cartridge and boasts 60k of free memory, it can have up to eight layers to a drawing, and lines and circles can be picked up and moved around.

It is claimed that the package is easier to use with pop-up menus, and it has an innovative safety feature whereby a drawing is held in sideways RAM.

Hitachi, Epson and Plotmate plotters are supported and others can be set up from a built-in driver generator.

Technocad is expected to cost £149 (plus VAT). However, there will be a good discount for schools and there is also a trial disc which is available free of charge.

Autosketch for the Arc was announced in the spring and is an expanded version of a standard package on the IBM PC. Its big brother, *Autocad*, is claimed to be the world's best-selling CAD software.

It benefits from the greater power of the Arc in not being limited in memory size. The Arc version, which costs £91.54, also scores over the PC in being able to load in drawings done on *Autocad* and other packages which support the DXF standard file format.

Dragons cause nightmares

Dragons, knights and haunted castles have come alive again on our TV screens with a second series of *Knightmare*, on Mondays at 4.45pm.

The idea for the programme was taken from a software adventure game which was seen and liked by producer Tim Child. The Anglia TV show has already won a French award for video production and it regularly attracts an audience of five million viewers.


A software adventure game inspired this TV series – *Knightmare*

Knightmare is based on the dungeon game format now familiar to us all and popularised by PC software. The special effects are also created on a computer by Robert Harris of the Travelling Matte Company. Anyone who has ever played an adventure game on a micro will know what to expect from *Knightmare*.

United Nations buy 60 Arcs

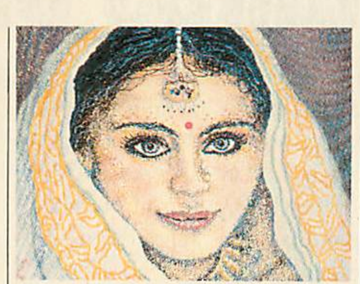
United Nations money has been used to ship Archimedes computers over to Turkish schools in northern Cyprus.

The UN paid for 60 Arc 310M colour systems. The order, worth over £50,000 was placed with Acorn's distributor in northern Cyprus, Birinci Ticaret Sti. The micros have been supplied through Lindis International, Acorn's international distributor in Suffolk.

Birinci Ticaret has already installed BBC B micros in Cyprus' first ever computer laboratory, the Turk Maarif Kolegi College.


Benjy the cat was produced using *Artisan*

Winner in oils


This entry will be painted in oils

This month's winner of our Artisan competition is Kathie Lewis of Hampton Hill in Middlesex. Her portrait of Benjy the cat is the final winner – the competition is now closed. Kathie wins a box of floppy discs for her Arc.

Acorn User group editor, Tony Quinn, Dave Clare and Clares' artist in residence Jon Warmisham have chosen Mrs M J Goodchild of Trumpington, Cambridge as the overall winner. Her portrait of an Indian woman, which won in July, will be turned into an oil painting by Jon Warmisham.

Spreading out

The Archimedes now has a three-dimensional spreadsheet designed for scientific, educational and commerical uses.

Matrix-3, from Cambridge Microsystems costs £109.25, and information can be displayed and printed using a range of text, numeric or user defined cell formats.

Service deal

Epson has added 'paper parking' to its FX850 and FX1050 printers so you can swap between continuous paper and individual sheets more easily. The near letter quality printers range from £528 to £689.

Epson also offers a free 12-month on-site service contract with all GQ3500 laser printers.

Arc's going on the ale

An Archimedes ale house could be under way if landlord Terry Stanley has his way.

Terry, who runs the Punchbowl in Hurst Green, Lancashire, plans to use his Arc to design a new layout for his pub and restaurant. He already uses his micro to print menus for the restaurant and keep a record of staff wages and stock levels.

Said Terry: 'I plan to use a program that will allow me to plan where to put all my tables and use the space available.'

THE COMMS COLUMN

* Master 512 owners have long been restricted to using BBC mode for comms work, as no MS-DOS comms packages would work on the machine. It now transpires that the PC package *Comm Plus* from Margolis Systems does actually work legally under DOS Plus, and will therefore communicate with both ASCII and Prestel-type systems on the Master 512. A demo version of *Comm Plus* is available from the Direct Line bulletin board (24 hr, V21/V22, scrolling 8N1) on 01-841 1847. The author and publisher, Andrew Margolis, can be contacted on Prestel mailbox 018379789.

* While on the subject of the Master 512, if you're a Prestel user who's bought one (the recent price cut makes them good value), or are using DOS on the Archimedes, you might like to stray away from the BBC pages on Prestel to PC Support (*PCSUPPORT#), where DOS topics are the order of the day. This area is run by the same people who operate Direct Line.

* Microlink has finally put up its prices, increasing the basic subscription from £3 to £5 per month. No other charges have changed, so it is still the cheapest way of accessing Telecom Gold for all but the most infrequent user. Telecom Gold have announced that the *Justis* legal database is available through a gateway to all users at £1.50 a minute, rather than only by prior subscription and direct access as before.

* Beebug's long awaited Archimedes communications software, *Hearsay*, written by David Pilling, author of its *Command* ROM for the BBC, and priced at £69, is receiving an enthusiastic welcome from Prestel users. The program joins *ArcTerm* (£49.95) from The Serial Port, and *U-Connect* (£59.95) from Magenta in offering both viewdata and ASCII communications to Arc users. The program is strong on features, including Vasscom error-correction, meaning that those Prestel users who have access to a Vasscom port can say goodbye to line noise corruption.

* Orion Computer Services has released yet another new bulletin board system for the BBC micro, *Ebbs II*, which works in a hybrid between viewdata and scrolling modes, offering full colour to BBC users, and both XMODEM and CET viewdata software downloading, depending upon which type of terminal you are using. The system offers the usual mail and special group area facilities, and allows you to run external programs, such as on-line games. *Ebbs II* costs £30. Orion are on 0772-436506.

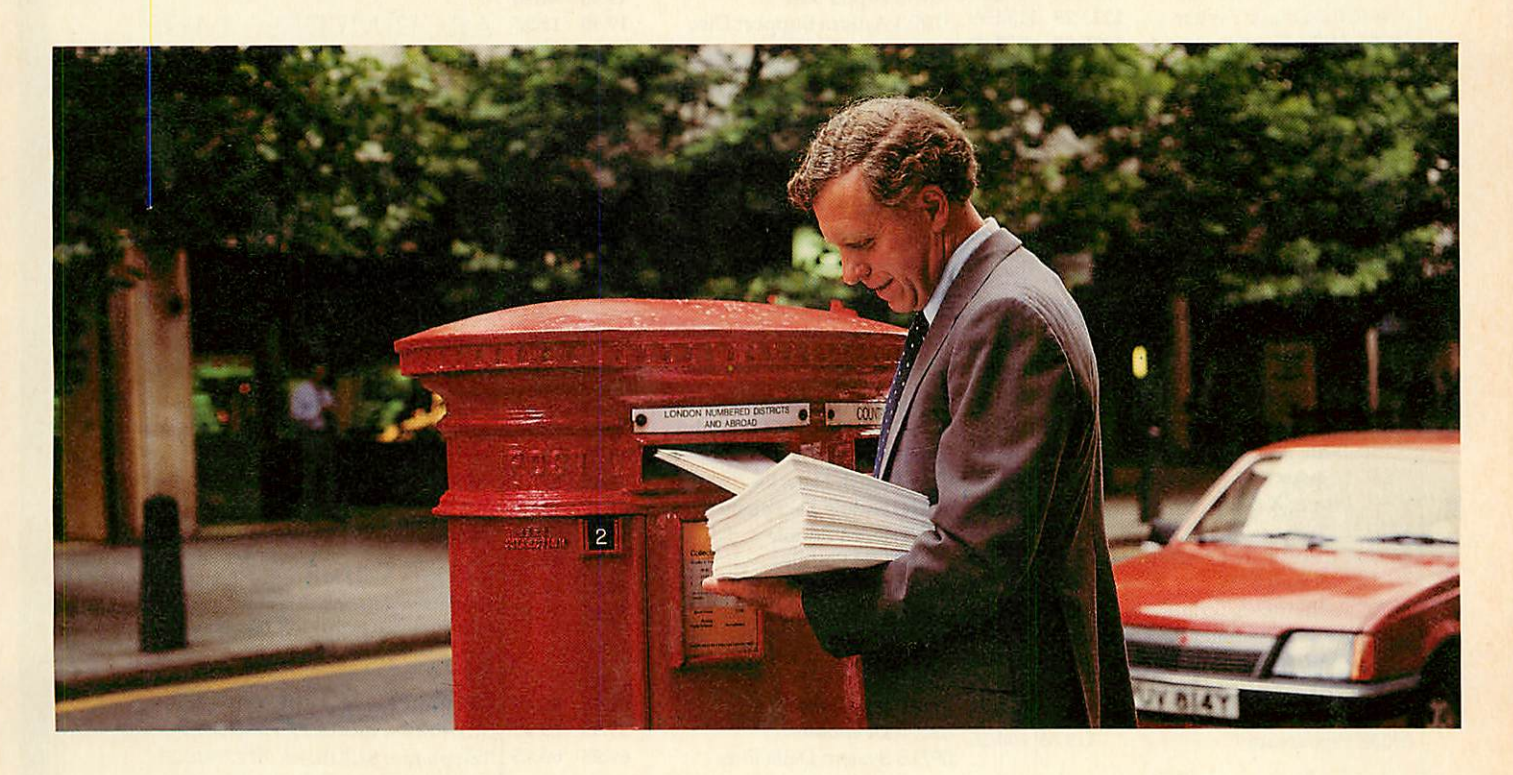
* In this month's Bulletin Board spotlight we look at The World of Cryton, one of the few boards specialising in the Archimedes, which can be found on 0458-47608, (24 hrs, scrolling 8N1, all speeds). There are several downloadable files, and a support group for users of *ArcTerm* comms software. Not surprising, as the sysop ALT_man is in fact Hugo Fiennes, author of the program. TWOC is a rather whimsical board, and may take a bit of getting used to. It contains among other things, a computer dating service!

* Readers who use abbreviated dialling for Prestel, for example 618 for London, should beware. If you change to a cheaper Mercury phone, it won't work. Mercury only give you access on the full 618 1111 number.

■ If you have any comms news for David Atherton, you can write to him here at *Acorn User*, or through his mailboxes on Prestel 942876210 and Telecom Gold 72: MAG11596.

David Atherton

The day Roger Jackson sent his first mailshot.



I was impressed by the fact that Star have now produced a great looking little budget printer with a 24 pin head.

I was impressed by its excellent quality – the 8 resident fonts available and its high density letter quality helped me produce a really professional mailshot.

I was impressed by the extremely swift draft elite speed of 170cps and LQ elite at 57cps and the standard 7k buffer.

I was impressed by the special push-tractor feature that allows the LC24-10 the lowest possible tear off and its ability to 'park' continuous paper and load single sheets automatically – so there's no need to remove the continuous.

I was impressed by the touch-button front control panel that makes using the printer an absolute dream.

But most of all, I was particulary impressed with myself.

Because my Star LC24-10 was so inexpensive and no other printer comes close for sheer quality and value-for-money.





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Company ______________________

Address ______________________

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Or just call Belinda on 01-840 1829. L24 ANU10

Sequel to *Princess and the Ring*

- *The Wizard Strikes Back* from Cambridgeshire Software House comes complete with story tape and worksheets. By finding clues and solving puzzles the children must destroy the evil weed, planted by the wizard. It is aimed at infant and lower junior pupils, and costs £23 for the BBC B and Master and £27 for the Compact.
- The Advisory Unit's recently released *Stopress* package is seen as being easier to use and having more advanced facilities than any other viewdata/teletext emulator. Any school wishing to use teletext for databases, information services or any other purpose will have facilities such as different sizes of print-out, colour print option, choice of large text fonts and easy-to-use graphics facilities. *Stopress* costs £30.
- Fernleaf Educational Software's *Shields* is aimed at junior-secondary children in History, Art and Design classes. It allows the user to create heraldic shields and coats of arms which may be printed out. This package is also included in the *Castles Resources* pack, one of a series of history topic packages. *Shields* costs £12 while the *Castles Resources* pack costs £39.
- ESM's *Numbercopter* is a suite of short programs for use with pre-school and reception children. They aim to develop number and reading skills. The programs, which cost £17.50, may be driven from the BBC or Concept keyboards or from ESM's own Pop-it keyboard.

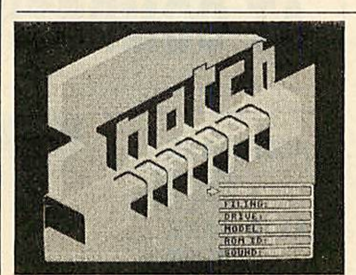
Arc's going plotty

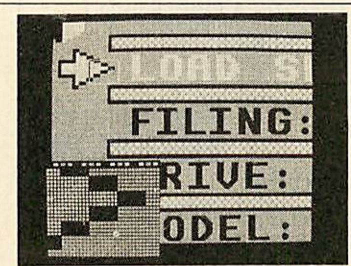
Presenter from Lingenuity and *Gammaplot* from Minerva Systems fill a gap in the Archimedes market left by database and spreadsheet programs which cannot produce graphs as output. They can produce bar charts, pie charts and line graphs in colour or black and white from data entered by hand or from disc.

Presenter is directly compatible with *Pipedream* from Colton, and may be used to create graphs for importation into *First Word Plus*, *Graphic Writer* and *Artisan*.

Other packages which support the 'comma separated value' format can be used with *Presenter*. This is used for storage of data, and the name refers to the fact that each value in a record is separated by a comma. Even data which is not in this format can easily be converted by loading it into a text processor and modifying the field separators.

Gammaplot has better features than *Presenter*, but at a higher price. Graphs can be customised using an in-built art package. Up to 20 charts may be displayed at any one time on screen and it is impossible to plot more than one graph on the same axis. *Gammaplot* supports line, scatter, bar and pie charts as well as histogram, 3D histogram, and text-only charts.





Snatch: enlarge a section of the screen and alter with a pixel editor

Snatching and printing

Snatch, from 4Mation, is similar to ESM's _Screenprint_. It too allows the user to send screens to the printer during the operation of almost any program. However, the idea has been taken much further. _Snatch_ allows you to 'grab' screens, modify their colours, save them to disc, print them in black and white or colour (depending on the printer!) in either normal or enlarged size. Portions of screens may be enlarged separately, allowing favourite characters or screens to be extracted. _Snatch_ costs £16 and needs sideways RAM on a BBC B, but runs on a standard Master or Compact.

An interactive journey

Journey to Bloblumpy is one of the first interactive books for junior users released by Information Education. It is written by London teacher, Maureen Crowe, and it encourages children to read and write. Text appears in large character print and children can change screen colours. The package costs £17. A competition for users offers prizes to schools submitting paintings, drawings or written work. Closing date is November 11, 1988. Entries to Information Education, Unit 33, Enterprise Centre, Bedford Street, Stoke-on-Trent ST1 4PZ.



Noel Thompson; NCET boss

Into the Future

Mr Noel Thompson, head of the newly-formed National Council for Educational Technology will be one of the speakers at *Into the future with ESG*, a Resource conference due to be held at Doncaster race course on November 17. Other speakers include Dr Philip Lewis, head of the DES' IT in Schools' unit; the managing directors of Acorn, Harvey Coleman, and of Research Machines, Michael Fischer.

A series of lectures and seminars will be accompanied by an exhibition which looks set to top 40 stands. The conference is aimed at all people involved in introducing new technology into schools. Tickets costs £8, including buffet lunch, from Anne Swainston at Resource.

Support material for RSA

The RSA's popular Computer Literacy and Information Technology course is now supported by a course and tutor's pack from Heinemann Educational Books. *How to Make Computers Work For You* (£4.95) is a step-by-step course covering all the main business applications. The course is set out so that students always know what is required of them.

DIARY DATES

September 10. Art and Computers Conference, Teeside Polytechnic, Middlesbrough, Cleveland. Tel: (0642) 211347.
September 13–15. International Conference on Computers in Clinical Medicine. Nottingham. Tel: Rosamund da Gama 01-387 4949.
September 14–18. Personal Computer Show, Earls Court. 8–10 Hallam Street London W1. Tel: Sue Clark 01-636 3205.
September 17. Special Needs User Group (SNUG) Conference '88. SNUG, 39 Ecclestone Gardens, St Helens WA10 3BJ.
October 10–11. Electronic Publishing Seminar, London. Tel: Patricia Leach 01-730 3438.
October 11–13. Computer Graphics '88, Wembley Exhibition Centre. Tel: Barry Challinor (0763) 62041.
October 13–14. Exploitable Technology '88. Gloucester Hotel, London. Margarette Karn, Butterworth Scientific Ltd. PO Box 63, Westbury House, Guildford, Surrey GU2 5BH. Tel: (0483) 300966.
November 8–10. Fifth National Conference and Exhibition on Learning and Technology, Wembley Conference Centre, London. Tel: Tessa Berry 01-727 1929.
November 15–17. Techmart Exhibition, NEC, Birmingham. Lisa Reuben, 5a Portman Square, London W1. Tel: 01-935 4437.
November 17. Conference and Exhibition on Advanced Technology and New Directions in Learning, Doncaster Exhibition and Conference Centre. Anne Swainston, Resource, Exeter Road, Wheatley, Doncaster. Tel: (0302) 63784.

BLUNDERBOX

August's issue missed out the address for Great Elm Services, who offer a catalogue of world puzzle games for BBC micro and Electron users. It is Treetops, Great Elm, Frome, Somerset BA11 3NZ.

Also here's the address for Beard Technology, as mentioned in September: 111 Evering Rd, London N16 7SL.

In Chris Adie's Go With The Flow listing, line 1520 should start with SYS not SWI.

Reader John Harris of Bath, pointed out an error in September's Hints & Tips, where listing lines 2 were lost. The missing lines are shown above.

```
   60 DIM block% &30,spa
re% &30,oscom% &30
   70 :
   80 CLS
   90 INPUT "Name of Dir
ectory to be wiped: $."r
oot$
  100 root$="$."+root$
  110 IF root$="$." THEN
 root$="$"
```

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■ Morley Electronics are now at: Morley House, West Chirton, North Shields, Tyne & Wear NE29 7TY.

Contacts

Advisory Unit, Microtechnology in Education, Endymion Road, Hatfield, Herts AL10 8AU
Anglia Television, Anglia House, Norwich NR1 3JG
Apple Computers, Eastman way, Hemel Hempstead, Herts HP2 7HQ
Audiogenic Software, Winchester House, Canning Road, Wealdston, Harrow, Middx HA3 7SJ
BBC Interactive & Video Centre, BBC Elstree Centre, Clarendon Rd, Borehamwood, Herts WD6 1JF
British Telecom Centre, Press & Broadcast Office, Floor A3, 81 Newgate, London EC1A 7AJ
Clwyd Technics, Antelope Industrial Estate, Rhydymwyn, Nr Mold, Clwyd CH7 5JH
ESM, 32 Bridge st, Cambridge CB2 1UJ
Epson (UK), 388 High Rd, Wembley, Middlesex HA9 6UH
Heinemann Educational Books, Halley Court, Jordan Hill, Oxford OX2 8EJ
IBM UK, PO Box 41, North Harbour, Portsmouth PO6 3AU
Lindis International, P O Box 10, Halesworth, Suffolk IP19 ODX
Lingenuity, Wood Farm, Linstead Magna, Halesworth, Suffolk IP19 0DM
Longman Group, 6th Floor, Westgate House, The High, Harlow, Essex CM20 1NE
Mewsoft, 11 Cressy Rd, London NW3
Micro-Aid, 25 Fore St, Praze Camborne, Cornwall TR14 0JX
Minerva Systems, 69 Sidwell St, Exeter, EX4 6PH
Number One Systems, Harding Way, Somersham Rd, St Ives, Huntingdon, Cambs PE17 4WR
Qume UK, Qume House, Park Way, Newbury, Berks RG13 1EE
Superior Software, Regent House, Skinner Lane, Leeds LS17 1AX
Tandata Communications, Albert Road North, Malvern, Worcs WR14 2TL
Toucan Communication Aids, Unit 21, Third Ave, Crewe Industrial Estate, Crewe CW1 2XU
UBI, Sun Alliance House, New Inn Hall St, Oxford OX1 2QE

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Atomwide 4-slot Arc backplane

One of the criticisms of the Archimedes 300 machines is that they can't accept more than two podules. This can be limiting, especially as the hard disc upgrade takes up one slot.

There is no reason why a 400-series four-slot backplane wouldn't work on, a 305 or 310. The power supplies are different, but this would cause problems only if four podules all drew full power.

Acorn don't sell four slot backplanes separately, but two companies, Computer Ware and Atomwide have designed their own. The Atomwide backplane comes complete with mounting brackets and screws. Full installation instructions are also supplied.

The Acorn two-slot backplane uses plastic spacers and self-tapping screws. The Atomwide board is ready assembled, so fitting is easier. The whole board took less than 10 minutes to install. In use, it duplicates the Acorn version perfectly. An optional fan kit can also be supplied, and is recommended for anyone who is going to use more than two slots. Installation instructions are supplied.

The Atomwide backplane is good value for money and offers more flexibility for podule add-ons. At £56.35 it's £10 more than the Acorn two-slot version and lacks the fan, but it's a worthwhile add-on for any Archimedes 300 owner. The Computer Ware unit is similar, and includes a fan for £59.95.

Rob Miller

Atomwide, 23 The Greenway, Orpington, Kent, BR5 2AY, tel: (0689) 38852. Computer Ware, 55 Romulus Court, Brentford Dock, Justin Close, Middlesex, tel 01-568 8678.

Simple publisher



***The Publisher* can do DTP with View**

The latest package from PMS, *The Publisher* plus your own *View*, *Wordwise* or *InterWord* chip turns your BBC micro or Master and printer into a desktop publishing package. It is supplied on a 64k PAL-PROM, which contains the operating software and data for 16 high-quality fonts.

At the heart of the package is a 'page description language', which integrates with your wordprocessor. You put the commands into your text to control the printers output. They are mnemonics of the functions they perform and are therefore easy to learn.

The language allows you to select the typeface or font used; the size of text; the spacing; whether the text is left, right, or block justified; or centred and underlining is available in a range of styles. You can vary the width and height of characters and there are also facilities for boxes around text. But there's no provision at all for more than one column of text.

As well as the 16 fonts supplied, PMS has over 60 extra fonts, which can be purchased four to a ROM or for loading into sideways RAM.

Where *The Publisher* really scores is in its ability to preview its output on the screen before printing. The command *PREVIEW gives a full Wysiwyg display.

Overall *The Publisher* (£46) will allow you to publish high-quality materials that you never thought possible.

Dave Futcher

Clares' Alphabase



***Alpha Base* – a bit disappointing**

Alphabase is an Archimedes development of the popular BBC micro *BetaBase* – a cheap, simple to use database manager from Clares. It comes with a simple manual and floppy disc – you can install it on your hard disc. The manual would benefit from more illustration, but setting up a database is covered adequately and there's a tutorial in the appendix.

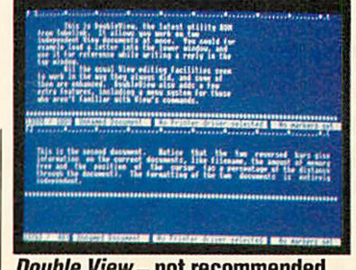
You can define the fields of your database by 'painting' fields onto the screen – a single record can span up to 16 screens. A single mouse press defines a new field, and a menu allows you to choose its type.

Typing in data is easy, and you can define different 'forms' to type onto or print out with. Fields can be hidden from prying eyes, and the data can be encrypted if necessary (vital for business applications after the Data Protection Act).

Selecting records from the database is simple, and you can browse through them or use the selected records for mail-merging. But the mailmerge option is very basic. It can only use ASCII document files, so your letter can't include any highlights, and there's no pagination so it can only be a one-page letter. At £49.95 *Alpha Base* is competent but a bit disappointing.

Graham Bell

Double your word power



***Double View* – not recommended**

Tubelink's *Doubleview* allows you to use the *View* word-processor on two pieces of text at once, in two windows on a single screen. You can vary the amount of each that's visible and you can cut text from one document, and paste it into the other. But you can't see two parts of the same document on screen at once.

The *View* command screen can't be used – the bar at the base of each window gives the same sort of information, and the commands are issued from a series of menus. It does add a few 'good things'; automatic saving of the text every few minutes, and a multi-file system like *Pipedream* or *InterWord* instead of *View's* cumbersome continuous processing system.

It works on the model B if you have *View* 3 and sideways RAM, or on the Master 128 and Compact.

Overall, I was impressed that *DoubleView* worked, but I'd find it very hard to recommend at £39.93 on disc and £49.95 on ROM.

Graham Bell

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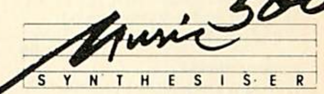
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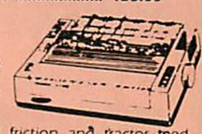
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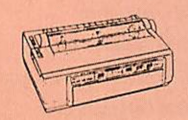
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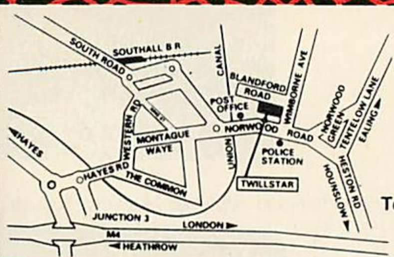
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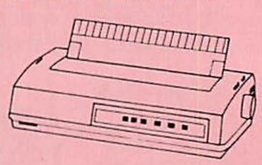
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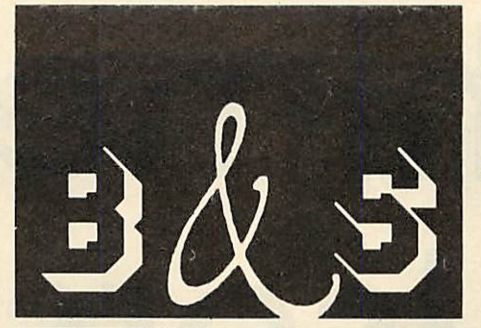
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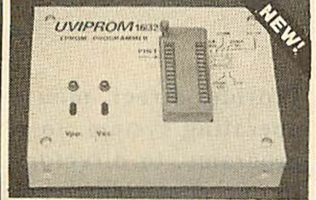
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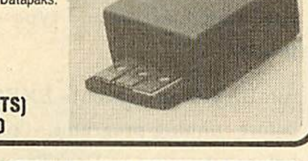
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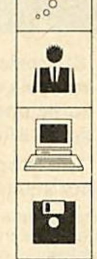
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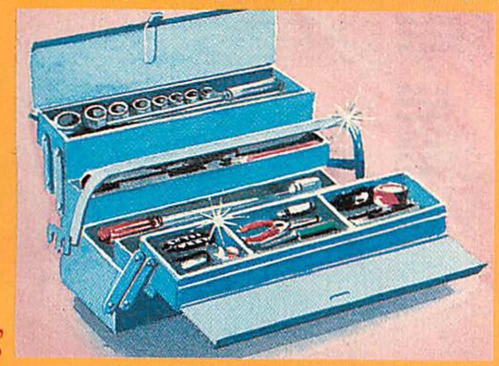


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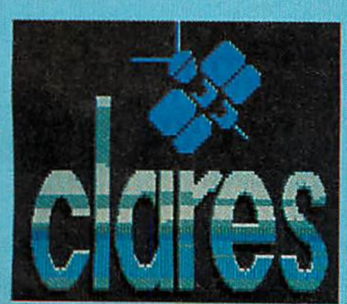
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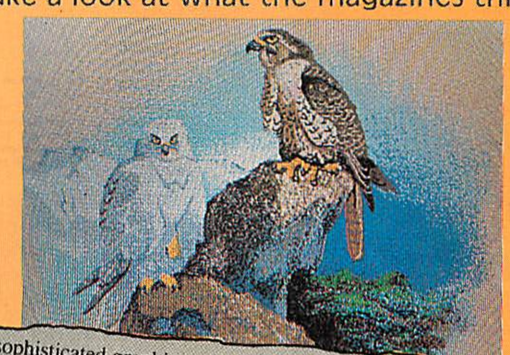



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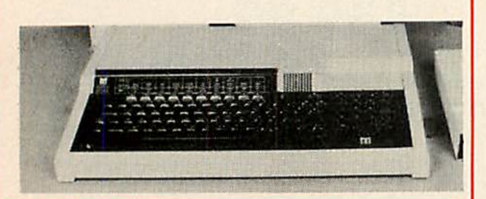





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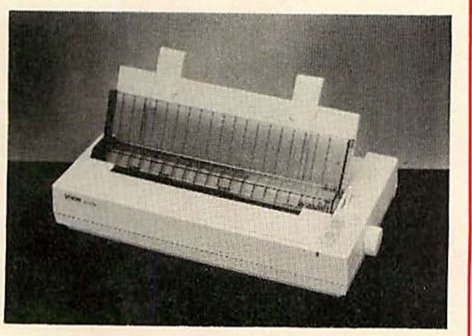
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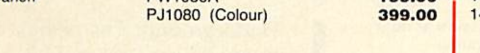
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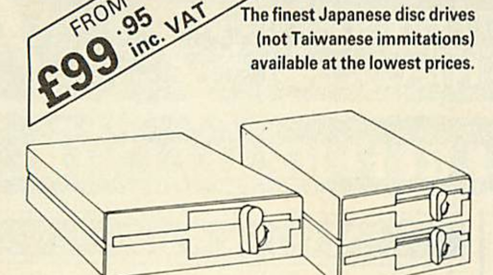
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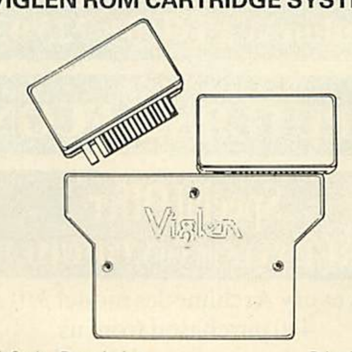


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CARTRIDGE SYSTEM

VIGLEN ROM CARTRIDGE SYSTEM



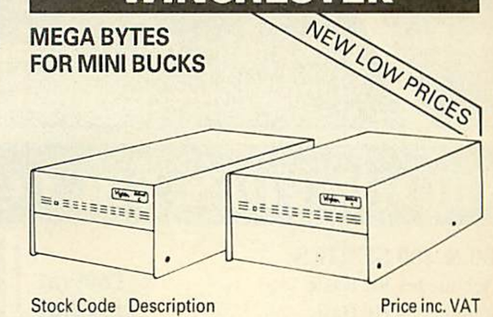
Stock Code	Description	Price inc. VAT
V560	Viglen Rom cartridge system for BBC	£12.95
V559	Viglen Rom cartridge system for BBC (low profile)	£12.95
V550	Viglen Rom cartridge system for Master	£14.95
V551	Viglen Rom cartridge system for COMPACT	£14.95
V561	Single Viglen cartridge	£3.45

Please add £2.50 P & P (£00.50 for single cartridge).

WINCHESTER

MEGA BYTES FOR MINI BUCKS

NEW LOW PRICES



Stock Code	Description	Price inc. VAT
Drive 0 Single		
SPO150	VB20 20Meg Viglen Winchester	£479.00
SPO152	VB28 28Meg Viglen Winchester	£499.00
V155	VB40 40Meg Viglen Winchester	£769.00
V156	VB56 56Meg Viglen Winchester	£899.00
Drive 1 Second Drive		
SPO160	VB120 20Meg Drive 1 Winchester	£449.00
SPO162	VB128 28Meg Drive 1 Winchester	£469.00
V165	VB140 40Meg Drive 1 Winchester	£739.00
V167	VB156 56Meg Drive 1 Winchester	£769.00
V157	60MB Fast Tape Streamer Backup	£689.00

Please add £8 for insured courier delivery.

Available for use with SJ research file server at no extra cost, please specify when ordering.

HOW TO ORDER

Simply write to us with your requirements enclosing a cheque/postal order or your credit card no. for the total amount. Don't forget to add the cost of delivery. Allow 7 to 10 days for delivery.

Credit card holders may order, for order value over £50.00, by telephone on our sales hotline 01-843 9903 (8 lines).

Orders from overseas should be exclusive of VAT (please deduct 15% from the total cost).

Showroom opening hours Monday to Friday 9.30 to 5.30 Saturday by appointment

Viglen

Viglen Ltd., Unit 7, Trumpers Way, Hanwell, London W7 2QA
Telephone: 01-843 9903, Telex: 919 304 VIGLEN G
Fax: 01-574 5126



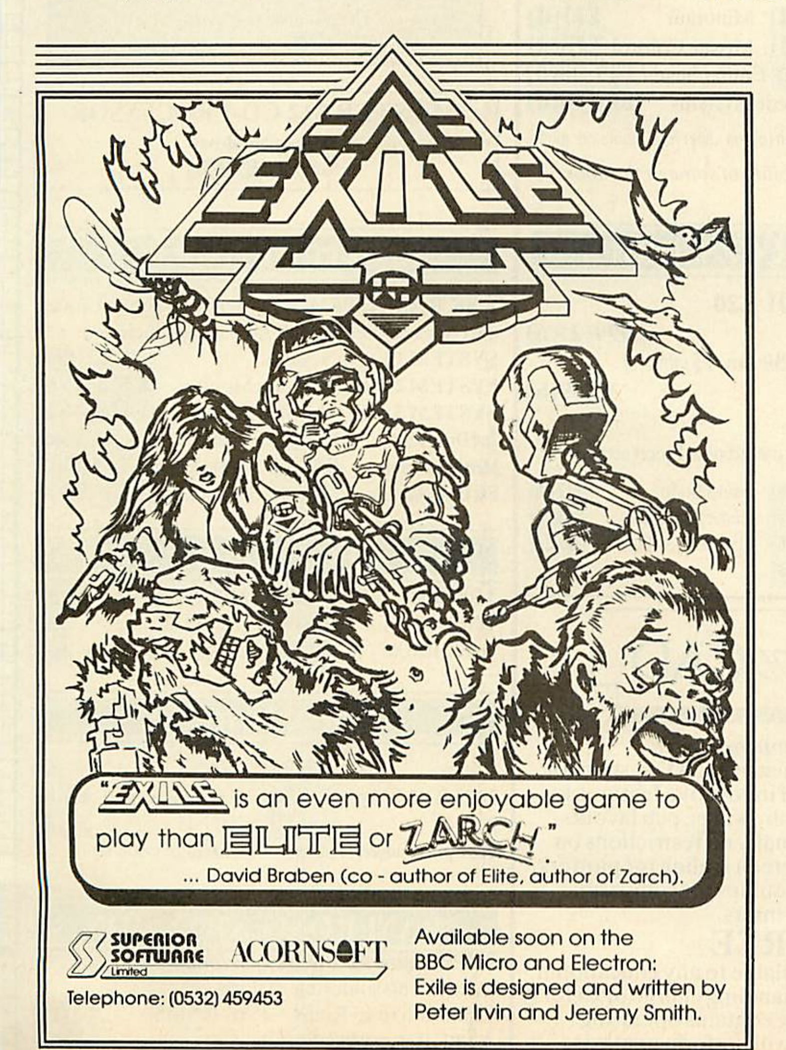
SALES HOTLINE
01 843 9903



OFFICIAL ORDERS

Official orders from education establishments, Government departments and Plc companies accepted Viglen has a special education department to process orders and queries from schools, colleges, universities and Local authorities so please ask for our education department when you call.

Being one of the major suppliers to the Education market, the experienced Viglen team will be able to understand and help you with your requirements.

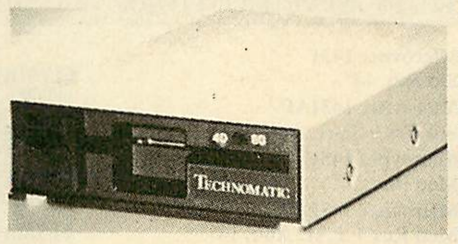




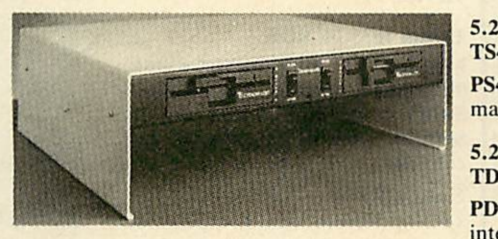
TECHNOMATIC

17 Burnley Road, London NW10 1ED Tel: 01-208 1177

TECHNOMATIC DISC DRIVES



TS 400



PD 800P

For users who do not need 40/80 switching capability, please specify as such and add suffix N on our product code. Drive price will be reduced by £5/mechanism.

A range of high quality high performance drives to meet the needs of all BBC Micro Users.

All drives fitted with high quality, slim line Mitsubishi drive mechanism and necessary cables.

*All drives are fitted with high quality slim line ultra low power mechanisms capable of single and doub... density operation and offering fast track access and head setting times. Our confidence in their quality enables us to offer a **two year parts and labour warranty** on these mechanisms without any extra charge.

*5.25" floppy drives are fitted with 40/80 track switches as standard at no extra cost. The switches are located in the front and clearly marked to indicate the status at a glance.

*The mechanisms are set inside attractively styled, sturdy metal casings painted in BBC beige colour.

*All drives fitted with all necessary leads and are ready for operation on unpacking. The drives with the mains power supply are supplied with a mains lead fitted with a suitably fused 13A moulded plug.

*TECHNOMATIC drives stand out from other drives because of the high quality of construction and use of reliable switchmode power supply units on dual drives.

5.25" Single Drives 40/80 switchable:

TS400 400K/640K	**£90(b)**
PS400 400K/640K with integral mains power supply	**£101(b)**

5.25" Dual Drives 40/80 switchable:

TD800 800K/1280K	**£170(a)**
PD800 800K/1280K with integral mains power supply	**£190(a)**
PD800P 800K/1280K with integral mainspower supply and monitor stand	**£209(a)**

3.5" 80T DS Drives:

TS351 single 400K/640K	**£69(b)**
PS351 3.5" single drive with integral mains power supply in a 5.25" case.	**£85(b)**
TD352 Dual 800K/1280K	**£126(b)**
PD352 3.5" dual drive with integral mains power supply in a 5.25" case.	**£149(b)**

Combo Drives (5.25" & 3.5" drives)

PD853 with integral psu	**£175(a)**
PD853P with integral psu	**£195(a)**

DISC DRIVE MULTIPLEXER

For Master, B, B+ and any DFS/ADFS

TDM2 Two computers/one drive unit	**£65(b)**
TDM4 Four computers/one drive unit	**£115(b)**

TECHNOMATIC WINCHESTERS

Technomatic offer the most popular range of Winchester drives for BBC micro systems at competitive prices. The drives are fully compatible with Acorn ADFS system. Fan cooled switch mode power supply ensure efficient and reliable operation. Combination of floppy and winchester drives in our elegant plinth housing provides an ideal solution for need to have large storage and ease of transferring data to floppies.

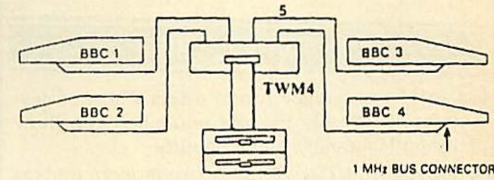
Technomatic front end utility for the Master supplied with the winchesters at no extra cost provides an easy and efficient file management system. The entire contents of the drive are displayed on the screen on boot up, each file or directory appearing as an icon. The icon type indicates whether directory or file and type of data if latter.

Files can be loaded by pointing at the icon.

Larger capacity drives available on request.

P20HD TECHNOMATIC 20 Mbyte Winchester Drive	**£419(a)**
P30HD 30Mb Winchester Drive	**£435(a)**
P40HD TECHNOMATIC 40 Mbyte Winchester Drive with Acorn ADFS ROM	**£669(a)**
P204HP TECHNOMATIC 20 Mbyte Winchester and a 80T DS floppy Drive built in a monitor stand. Includes ADFS Rom.	**£609(a)**
P2041HT As P204HP but also with a 10 Mbyte tape streamer backup unit and backup utilities. Includes ADFS Rom.	**£1179(a)**
TS10 10 Mbyte Tape Streamer Backup unit with utilities.	**£546(a)**
TFC10 10 Mbyte Pre-formatted Cartridge for use with P2041HT and TS10.	**£21(d)**

WINCHESTER Drive Multiplexer



These units let you share a Winchester drive between a number of computers. Full details on request.

TWM2 for two computers.	**£99 (b)**
TWM4 for four Computers.	**£149 (b)**

NEW Following the great success enjoyed by our P20HD unit, we are pleased to announce the launch of P30HD – a 30Mbyte hard drive. This drive is also supplied with the free front end utility for the Master. **£435(a)**

3M FLOPPY DISCS

5.25" Discs in packs of 10

744 40T SS DD	**£6.50(d)**
745 40T DS DD	**£8.00(d)**
746 80T SS DD	**£12.00(d)**
747 80T DS DD	**£11.00(d)**

3.5" Discs in packs of 10

80T SS DD	**£13.50(d)**
80T DS DD	**£15.00(d)**

(Add £1 for library case packing)



BULK DISCS

50 5.25" 40 T single sided discs with sleeves in lockable box.	**£25(b)**
50 5.25" 80 T double sided discs with sleeves in lockable box.	**£32(b)**
50 3.5" 80T double sided discs with sleeves in lockable box.	**£60(b)**

FLOPPICLENE DRIVE HEAD CLEANING KIT

5.25" Kit with 20 disposable discs	**£14.00(d)**
3.5" Kit with 20 disposable discs	**£14.75(d)**

DISC STORAGE BOXES

DB340 Lockable 40 × 3.5"	**£8.50(c)**
DB550 Lockable 50 × 5.25"	**£6.50(c)**
DB570 Lockable 70 × 5.25"	**£8.50(c)**
DB5100 Lockable 100 × 5.25"	**£10.50(c)**

All prices ex VAT and subject to change without notice. See page 5 for Carriage Charges.

TECHNOMATIC

305 Edgware Road, London W2 Tel: 01-723 0233

PRINTERS

EPSON

LX800	£179(a)	LQ500	£279(a)
FX800	£309(a)	LQ850	£419(a)
FX1000	£405(a)	LQ1050	£589(a)
EX800	£409(a)	LQ2500+	£849(a)
EX1000	£549(a)		

GQ3500 Laser Printer £1249(a)

Taxan KP815 £159(a) Taxan KP915 £275(a)

Star LC10 £175(a)
Star LC10 Colour £229(a)

NATIONAL PANASONIC
KXP1081* £145(a) KXP1082* £172(a)
*(*includes Wysiwyg ROM + Master Lead)*

KXP3131 with 38K buffer £245(a)
Canon PW1080 £179(a)
Canon Laser LBP8-II £1595(a)
Brother HR20 Daisy Wheel £349(a)
Juki 6100 Daisy Wheel £295(a)
Integrex Colour Inkjet £515(a)

PLOTTERS

Hitachi 672XD A3 4 Colour HPGL £499(a)
Plotmate A4S £379(a)
Plotmate A3M £549(a)
Roland 880 A3 Flat bed 8 col £599(a)
Variety of Plotter pens and accessories in stock.
Larger Plotters available. Please enquire.

EPSON LQ500

Epson's budget 24pin letter quality printer provides unrivalled print quality with two built in letter quality fonts and widest repertoire of type styles at low cost. Sans Serif and Roman or draft font can be selected from the front panel. Maximum resolution of 360 × 180 dpi. Friction and tractor as standard. Parallel interface. Designed for low noise operation 55dB(A).
Introductory price incl. master lead **£279(a)**

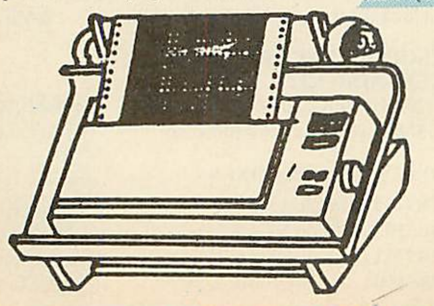
EPSON LX800

Epson's latest budget printer offers a host of new features all utilising Epson's unrivalled knowhow of printer technology and reliability.

★ 180cps draft/25cps NLQ ★ two modern fonts as std: Sans Serif and ROMAN. NLQ font selection from front panel ★ Tractor and friction feed ★ Single sheet guide with auto load switch. Original + 2 copies.
★ 3K input buffer with character downloading facility
★ Fully compatible with BBC & IBM graphics
★ Centronics interface as standard
★ Price including BBC master lead **£179(a)**

PRINTER STAND

A new style printer stand with easy paper feed and paper seperation, provides complete access to paper. Can be used with both top and bottom paper feed. Very space efficient. **£26 (b)**



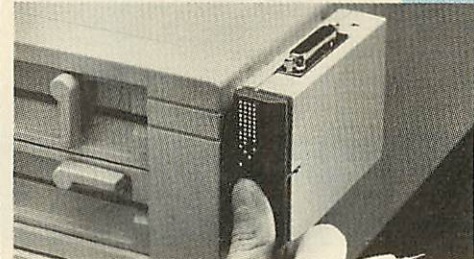
PRINTER BUFFERS SHARER & CONVERTERS

TSB 256 Auto Sharer/Buffer
256K buffer with 3 input ports. Each port scanned automatically every 10 secs until data found. PAUSE, COPY and RESET Facitilies. Full spec on request. £169(a)

Smart Printer Buffers
Facilities include: COPY upto 265 copies PAUSE, RESET, Self-Test.
For serial: X-on/X-off, ETX/ACK or DTR/DTS protocols independently selectable baud rate for each port
PP256 256K Parallel buffer £169(b)
SS256 256K Serial buffer £189(b)

Parallel Multi-Spoolers
Allows connecting 2 printers to 2 or 4 computers
Butter allows quick dumping of data to free the computers
COPY allows upto 999 copies, SELF-TEST, PAUSE, CLEAR
MS422 4computers/2printers 512K buffer £299(b)
MS223 2computers/2 printers 512K butter £199(b)

Compact Two Way Switch 2 computers to 1 printer or 2 printers to 1 computer Attaches to the side of a computer or a printer **£23(c)**



Serial/Parallel/Serial Converters
Compact economical converters which support X-on/X-off, ETX/ACK, DTR/DSR protocols
C-PS Parallel/Serial converter £35(c)
C-SP Serial Parallel converter £35(c)
Add £49 to above prices for units with 64K butter

Manual Printer Sharers:
(All lines are switched).

	Parallel	Serial
2 computers to one printer	£25(c)	£25(c)
3 computers to one printer	£39(c)	£39(c)
4 computers to one printer	£45(c)	£45(c)
2 computers to 1 or 2 printers	£49(c)	£49(c)

Cable sets for above sharers available for all popular computers

BBC Computer Sharer: TCS26
1 computer to 2 printers fitted with BBC cable £21(c)

Paper & Labels
Plain fanfold paper with microperforation:
2000 sheets 9½ × 11″ £12(£3.50)
2000 sheets 14½ × 11″ £18.50(£4.50)
1500 sheets A4 90gsm £18.00(£4.00)

Labels/1000
Single Row 3½″ × 1⁷⁄₁₆″ (d) Triple Row 2⁷⁄₁₆″ × ⁷⁄₁₆″ £5(d)
OHP Transparencies A4 (100) £56(b)

PARALLEL PRINTER LEADS
BBC/Master (1.2m) £5(d) BBC/Master (2m) £7(d)
Archimedes (2m) £7(d) Compact (1.2m) £7(fd)

MODEMS

MIRACLE WS4000 V21/23 £129(b)
MIRACLE WS3000 V21/23 £244(b)
MIRACLE WS3000 V22 £379(b)
MIRACLE WS3000 V22 bis £495(b)
Pace Linnet £139(b)
(All modems are BABT approved)
BBC Data Cable for WS3000/4000 £10(d)
MIRACLE WS2000V21/23 & BELL stds £92(c)

MONITORS

All Monitors supplied with a suitable lead.

12″, 14″ and 20″ MONITORS

Microvitec 1431
Std Res, 14″ £179(a)
Microvitec 1431AP
Std Res + PAL/Aud, 14″ £199(a)
Microvitec 1451
Med Res, 14″ £225(a)
Microvitec 1451AP
Med Res + PAL/Aud, 14″ £255(a)
Microvitec 1441
Hi Res, 14″ £359(a)

Philips 8833 14″ RGB
Med Res, 14″, high contract screen, TTL/Linear input, Mono/Colour Switch Stereo Sound Input. Separate controls for brilliance and contrast. £219(a)

Sanyo CRT 70
14″ High Resolution Colour Monitor £149(a)
Compatible with Master, B, Compact, and PC compatibles

Microvitec 2030CS
20″ Standard Resolution RGB/Comp Video £380(a)

Microvitec 2040CS
20″ High Resolution RGB/Comp Video £675(a)

TAXAN SUPER VISION 620
12″ Hi Res/Hi Contrast Option to switch to green/amber BBC/IBM Compatible £269(a)

TAXAN SUPER VISION 625
12″ Super Hi Res and contrast RGB Monitor with option to switch to mono BBC/IBM compatible. £319(a)

TAXAN 770+
MultiSysnc Autoscan 14″, ideal for utilising the hi res modes on Archimedes. Our price includes a tilt & swivel stand £485(a)

NEC MultiSync II 14″
Enhanced version of the original NEC MultiSync. complete with tilt & swivel base. Suitable for Archimedes and PC compatibles. £479(a)

MONOCHROME MONITORS

PHILIPS 7752 NEW
14″ green screen monitor.
This is a new addition to the Philips' popular mono monitors. Features include Flat screen, Reverse video switch, separate brilliance and contrast controls £85(a)

PHILIPS BM 7502
Hi Res green screen £72(a)

PHILIPS BM 7522
Hi Res amber screen £79(a)
Tilt & Swivel Stand for Philips Mono £6(c)

MONITOR ACCESSORIES

Microvitec Swivel Base (14″ plastic monitors) £17(c)
Monitor Stand Models B & B+ £10(c)
Monitor Stand Master £13(c)
Double Tier Stand Models B, B+ or Master £24(b)
Taxan RGB Lead £7(d)
Microvitec Lead £4(d)
Monochrome BNC/Phono Lead £4(d)
Copy Holder Self Supporting A4 £15(c)

All prices ex VAT and subject to change without notice. See page 5 for Carriage Charges.

TECHNOMATIC

17 Burnley Road, London NW10 1ED Tel: 01-208 1177

CAD/DRAWING PACKAGES

NOVACAD
Cad Package for B, B & MASTER.
(See page 5 for specification)

Tracker Ball/Mouse Version (TM)	£49 (d)
TM Version plus Tracker Ball	£94 (d)
TM Version plus Mouse	£79 (d)
Plotter Driver Generator	£15 (d)
If purchased with Novacad	£12 (d)

MOUSE

AMX MOUSE with SUPER ART (pse specify B, B+ or Master)	£59 (d)
STOP PRESS (Pagemaker)	£32 (d)
EXTRA/EXTRA (utility for the Pagemaker)	£19(d)
MAX	£17 (d)
STAND ALONE MOUSE	£34 (c)

RB2 TRACKER BALL

RB2 Tracker Ball with Icon Master (for B, B+ & Master)	£59 (c)
RB2 Tracker Ball with Cursor Control Rom (for Master only)	£59 (c)
RB2 Tracker Ball 'Stand Alone' for use with NOVACAD & other software)	£47 (c)
Cursor Control Rom for Master	£12.50 (d)
MIRRORSOFT FLEET STREET EDITOR	£35 (d)

TIME WARP

Real Time Clock, Plugs into the user port, battery back up as standard, includes manual, demo software including a diary/planner application program £29(d)

BBC SOFT/FIRMWARE

DATABASE MANAGEMENT SYSTEMS

VIEWSTORE	£36 (d)
STARdataBASE	£39 (d)
MASTERFILE II	£17 (d)
ACORN OVERVIEW PACKAGE Special Offer (RRP £86)	£69 (b)
INTERBASE	£49 (d)

WORD PROCESSORS

ACORN VIEW PROFESSIONAL (BBC)	£69 (c)
VIEW 2.1	£35 (d)
VIEW 3.0	£45 (c)
Double View Rom Version	£42 (d)
Double View Disc Version (for Master & Compact)	£33 (d)
VIEW INDEX	£12 (d)
VIEW PRINTER DRIVER GENERATOR	£8 (d)
VIEWSPELL	£29 (d)
DOT PRINT PLUS	£28 (d)
WORDWISE	£24 (d)
WORDWISE PLUS	£38 (d)
WYSIWYG PLUS	£21 (d)
SPELLMASTER	£42 (d)
INTERWORD	£36 (d)
WORDEASE	£24 (d)
SPELLCHECK III	£31 (d)
EDWORD II	£43 (c)

SPREADSHEETS

VIEWSHEET	£36 (d)
WINDOMATIC (A Viewsheet Utility)	£15 (d)
VIEWPLOT	£22 (d)
INTERSHEET	£37 (d)
INTERCHART	£25 (d)
ULTRACALC	£26 (d)
MINI OFFICE II DISC Version	
For B & B+ 40T or 80T	£14 (d)
For Master 80T	£16 (d)
For Compact	£19 (d)
MINI OFFICE II ROM Version	
For Master, Compact, B+ & B	£43 (c)
MEGA 3Rom	£76 (b)

CC's integrated package offering Interword, Intersheet & Interchart on one 128K ROM. For Master, Compact, B+ & B

LANGUAGES

META ASSEMBLER	£145 (b)
TEAM DISASSEMBLER	£145 (b)
MACROM	£33 (d)
ACORNSOFT 'C'	£40 (c)
ACORN MICRO PROLOG	£62 (d)
ISO-PASCAL	£51 (c)
ISO-PASCAL STAND ALONE GENERATOR	£30 (d)
OXFORD PASCAL (40 or 80T) Specify B or B+	£36 (d)
OXFORD PASCAL for Master	£52 (d)
ACORN LOGO	£46 (c)
LOGOTRON LOGO	£55 (c)
BBC PUBLICATIONS OPEN LOGO	£59 (c)
ACORN LISP ROM	£39 (d)
ACORN FORTH ROM	£39 (d)
ACORN COMAL ROM	£39 (d)
Advanced BASIC Disc (for B, B+ & Master + 6502 2nd Processor)	£26 (d)
MICROTEXT	£52 (c)
MICROTEXT PLUS	£229 (b)

COMMUNICATIONS

TERMULATOR	£25 (d)
COMMSTAR II	£28 (d)
MAYA Comms Package See next page for details NEW	£49 (d)
MODEM MASTER	£11 (d)
COMMAND	£34 (d)
MASTER TERMULATOR	£34.75 (d)

UTILITIES

ACORN ADFS ROM	£26 (d)
ACORN BASIC EDITOR	£24 (d)
MONITOR (BBC Pub)	£19 (d)
SLEUTH	£23 (d)
TOOLKIT PLUS	£31 (d)
TOOLBOX 2 (BBC Pub) Manual	£9.50 (d)
Cassette	£9 (d)
ACORN GXR GRAPHICS ROM specify B or B+	£24(d)
PRINTMASTER	£24 (d)
PRINTWISE	£24 (d)
DUMPMASTER	£26 (d)
FONTWISE PLUS	£17 (d)
ADV TELETEXT UTILITIES ROM	£7.95 (d)

COMPACT (all on 3½" disc)

ARTROOM	£27 (d)
FONTWISE+	£22 (d)
FONT EDITOR	£22 (d)
BETABASE	£27 (d)
WHITE KNIGHT MKII	£16 (d)

BBC PUBLICATIONS EDUCATIONAL SOFTWARE

A series of programs developed in many cases alongside Radio & TV programmes by BBC's Education Department which supplement the classroom studies by moving and colourful displays helping in clear understanding of a variety of subjects. Some packages also include audio cassettes.

PRIMARY EDUCATION

ASTRONOMY	£11 (d)
COMPUTERS AT WORK	Aud/EC/disc£16 (c)
PICTURE CRAFT	Disc£17 (d)
INTRODUCING GEOGRAPHY	Disc£16 (d)
MATHS WITH A STORY 1	Cass£8 (d)
MATHS WITH A STORY 2	Cass£8 (d)
NUMBER GAMES	Cass/EC£7.50 (d)
USING YOUR COMPUTER	Cass£24 (c)
THE HALL OF MIRRORS	Disc£13 (d)
MATHS	Disc+AudCas£17(d)

SECONDARY LEARNING

TECHNOLOGY & DESIGN Pt1	£21.50 (c)
ELECTRIC FIELDS	£10.50 (d)
ADVANCED LEVEL STUDIES: STATISITICS	Disc£23 (d)
ADVANCED STUDIES: GEOGRAPHY	Disc£17 (d)
INSIDE INFORMATION	Prog Cass£10 (d)
Book£8 (d)	Audio Cass£5 (d)
OPEN LEARNING PACK	Disc/AudCas+book£36(b)
SCIENCE TOPICS (ST)	
S.T.:WAVES	Disc£14 (d)
S.T.:RELATIONSHIPS	Disc£14 (d)
S.T.:BONDING	Disc£14 (d)
S.T.:ELECTROMAGNETIC SPECTRUM	
S.T.:ELECTRONICS IN ACTION	Disc£14
S.T.:NEWTON & THE SHUTTLE	Disc£19
S.T.:ECOLOGY	Disc/EC£19
S.T.:POLYMERS	Disc/EC£19 (d)
S.T.:CLASSIFICATION & PERIODIC TABLE	Disc£20 (d)
S.T.:FOOD & POPULATION	Disc£20 (d)
SEC.SCIENCE MICROTECHNOLOGY	Cass£7 (d)
SEC.SCIENCE:THE MOLE CONCEPT	Disc/Aud/EC£16 (c)
BIRD SPY	Disc£13 (d)
GEORDIE Racer	Disc£13 (d)

GENERAL

VU-TYPE PROFESSIONAL	Disc£19 (d)
WHITE KNIGHT MK II (for 1770 DFS)	Disc£16 (d)
BATTLEFIELDS	Cass£8.50 (d)
A VOUS LA FRANCE	Disc£20 (d)
Book£5.25 (d)	Aud Cass(2)£7 (d)
ESPANA VIVA	Disc£19 (d)
Audio Cass(2)£8 (d)	Book£6.95 (d)
	(2) £7.50 (a)
DEUTSCH DIREKT	Disc/aud/EC£16 (c)
	Book£5.95 (d)

BLACK QUEEN
A long awaited bridge game. (1770DFS) £13(d)

BISMARCK
History of the famous battleship. (1770DFS) £13(d)

All software in this advertisement has been tested to work with appropriate Acorn Disc Filing Systems only and we are unable to comment on compatibility with any other filing system. It will be the buyers responsibility to verify such compatibility.

All prices ex VAT and subject to change without notice. See page 5 for Carriage Charges.

TECHNOMATIC

305 Edgware Road, London W2 Tel: 01-723 0233

BOOKS

No VAT Carriage Code (c)

LANGUAGES

- 6502 Assy Lang Prog £19.95
- 6502 Programming £13.95
- 8086 Book £23.95
- Acorn BCPI User Guide £15.00
- Acorn FORTH £7.50
- Acorn LISP £7.50
- Acorn ISO Pascal Ref Manual £10.00
- Intro to COMAL £10.00
- Intro to LOGO £7.50
- Micro Prolog Ref Manual £10.00
- Introduction to Turbo Pascal £14.95
- Prog the Micro with Pascal £8.50
- The Supervisor's BBC Micro £10.95

BBC MICRO GUIDE BOOKS

- Inside Information £8.95
- Maths Prog in BBC Basic £7.95
- The Friendly Computer Book £4.50
- Toolbox 2 .... £10.95

ARCHIMEDES

- Archimedes Reference Manual .... £29.95(b)
- ARM Assembly Language Prog .... £12.95(b)
- Inside Autosketch .... £15(b)

PROGRAMMING/UTILITY

- Advanced Sideways Ram User Guide £9.95
- Advanced User Guide (BBC) £15.95
- Applied Assembly Language on the BBC £9.95
- BBC Micro Advance Programming £9.95
- BBC Micro Ref Guide (B Smith) £10.95
- BBC Micro Sideways ROM's RAM's £9.95
- Guide to the BBC Rom £9.95
- Beginners Guide to W.P. £7.95
- Mastering Assembly Code £8.95
- **Mastering Interpreters & Compilers** £14.95
- **Master Operating System** £6.95
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WYSIWYG PLUS simplifies this trial and error approach using easily remembered *commands. For example, *ENLARGED not only selects enlarged text on your printer, but uniquely shows you double width characters on your screen, even from within Wordwise Plus!

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WYSIWYG PLUS is designed to work with the following systems:

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BBC Model B+	Turbo coprocessor	All printers (Except lasers)

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The package comprises of a rom, utils disc and a comprehensive manual. It is compatible with Master, Models B & B+. It supports DFS, ADFS, NFS and ANFS filing systems. **£49(d)**

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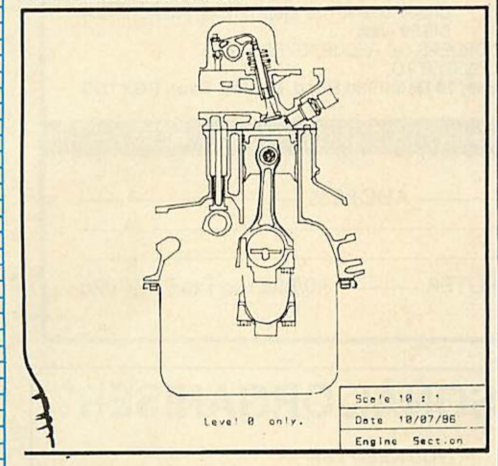
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Novacad is compatible with all models fitted with Acorn DFS. Hardware requirements can be minimum; single drive and FX80 compatible printer are enough to get started, though its performance is enhanced considerably by use of 6502 2nd processor, dual drive and to a degree with B+ and Master's shadow ram.

The major features offered are:

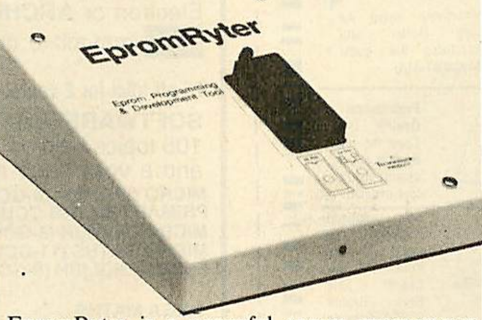
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● Assembles for over 30 popular processors, including Z80, 6800/01/02/04/05/09/11 etc – and 68000 – using native mnemonics for each processor, eg LD A, (HL) for Z80 and MOV A0, $1000 for 68000 etc.
● Fully integrated Editor: four field, all search, search/replace, block copy, delete, move, marked save, load etc.
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● Send object code in Intel Hex, S-Record, straight binary etc. down to discs, RS232, parallel port, Eprom Emulators etc – all **during Assembly.**
● Over 50 directives included as standard: handling nestable macros, conditional assembly and twenty types of table definition directives.
● 32 bit labels; 31 character names. Arithmetic and Boolean arithmetic to 32 bits.
● Modular source code with numeric and string parameter passing.
● Serial communicator area with eight options lines: echo, control code trap, LF suppression/addition etc.
● Over 500 in use throughout the world in universities and many different industries.
● Two 16K Roms, two 80 track discs, A4 ring-bound manual, function-key strip.

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● Complete with all cables, manual and disc.

PORTAL 512 (2716, 2732, 2764, 27128, 27256, 27512). **£245(b)**

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HINTS & TIPS

STRINGING ALONG

More about ADFS – with a focus on commands – a routine for colour separation and we make use of one of Basic's more neglected commands

David Atherton

£5

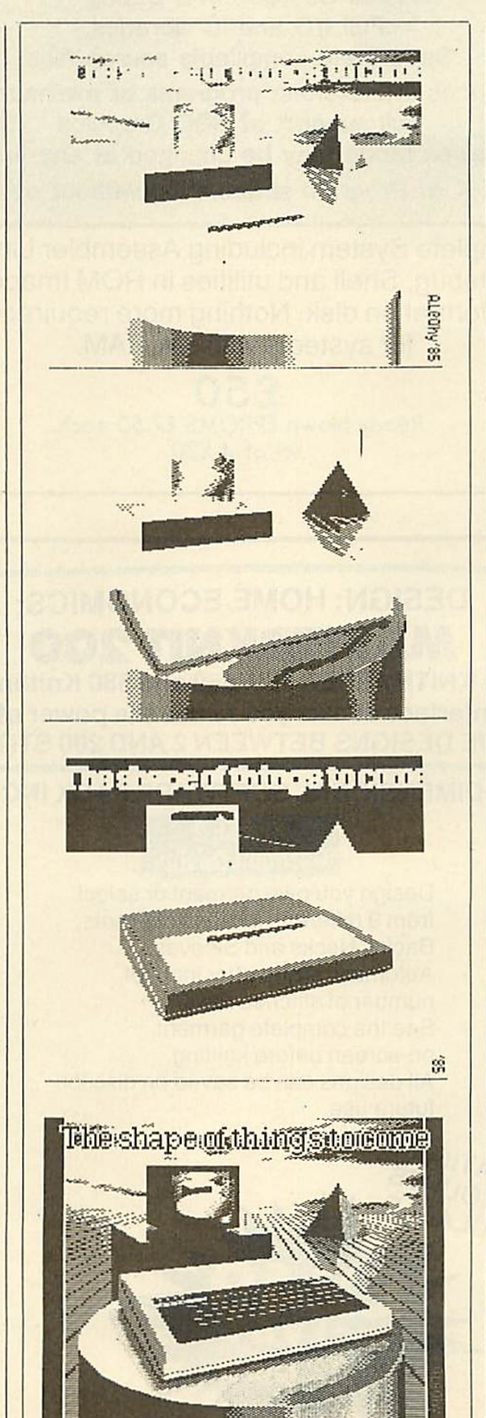
COLOUR SEPARATIONS

M Harwood of Morecambe was intrigued by Muriel Dearlove's masterpiece of lateral thinking in the August issue. She had created full colour pictures using multiple passes with coloured ribbon changes on a single colour printer. This method is also a fine demonstration of the technique of colour mixing.

Mr Harwood had a collection of colour pictures upon which he wanted to try out the technique. He didn't want to have to redraw each picture so he came up with a separation program to let the computer do the work. The program works by loading in a previously saved screen (in standard BBC screen mode format), and saving four screens, each one containing only one colour of pixel. These relate to the four 'process' colours used in colour printing – black, yellow, cyan and magenta. If you have used any of the flashing colours in your picture then you should replace them with steady colours.

The program works by loading the source picture repeatedly for each colour, and then scanning each pixel on the screen – every pixel that matches the specified colour is changed to white, and every one that doesn't, to black. If you have a fairly empty screen, the first thing you'll notice is that the background area is all turned to white on the first pass. If you intend the background on the print to be white, ie, not printed, then swap GCOL 0,7 and GCOL 0,0 in line 220.

When each screen has been scanned, the resultant mask is saved as a complete screen. Naturally, this can take up quite a lot of room on a disc, so a warning is printed before the program starts. If you're not sure whether you have enough space, press Escape at this point, check your disc and start again.



Separate the magenta, cyan and yellow parts of a picture to print in colour

When you have all the mask screens on disc, each one can be reloaded with *LOAD followed by the filename. A three line program to print the registration marks recommended in Miss Dearlove's article and then a layer of colour is:

```
10 VDU 2:PRINT STRING$
(30,"=")''':VDU 3
  20 *LOAD COLO
  30 *GDUMP
```

Change the filename in line 20 for each successive mask. Line 30 should be set to your own screen dump command.

The routine works with any of the eight BBC colours on the screen. It takes account of any changes made to the palette, by reading it with Osword 11 and adjusting each colour read from the screen. If you do redefine the colours, you'll have to add the correct VDU 19 commands after lines 200 and 310.

The way it works is to look at each pixel on the screen, and decide whether it should be included when printing each of the four coloured overlays. So for example, a magenta pixel only appears on the screen for printing with the magenta (pink) ribbon. A red pixel appears on both the magenta and yellow screens. If a pixel should be printed, it is changed to white, otherwise it is changed to black. This can work because the colours are arranged in a logical order – red is 1, yellow is 3 and magenta is 5. So in binary, red is 001, yellow is 011 and magenta is 101. The EOR operator is used to change these into 110, 100 and 010, and from there it is easy to see why red is yellow plus magenta.

This is adding pigments – adding light as the screen does work without EOR, so yellow (011) is red (001) plus green (010).

The four screen files are called COL0 to COL3, for cyan, magenta, yellow and black. When printing them, you should always use the yellow first, then cyan, magenta and black. This avoids getting the paler ribbons dirty.

MORE ADVICE ON ADFS

Last month I talked about the history of ADFS – its structure, and the method it uses to store files. I also covered some ADFS star commands. Now I want to look at those commands in more detail.

*ACCESS covers broadly the same function it did under DFS. It sets 'attributes' for files, such as whether they can be written to, deleted and so on. The command is followed by the name of the file being altered (or group of files – *ACCESS F* will change all files which begin with F), and then one or more of four letters, which are: L which stands for 'locked' and means that the file cannot be deleted, W means that the file can be written to by programs that use OPENUP and BPUT, R means that the file can be read and E means that the file is copy-protected.

DFS users will be familiar with the L suffix. The file cannot be deleted, nor can it be 'saved over'. Many packages that involve file access – ie, wordprocessors or spreadsheets – don't 'open' files as such. They load a file and keep it, and any modifications you make are kept entirely in memory. The file is saved at the end, probably using the old filename. If the old filename is used, the old file is first deleted, and a new one saved under the same name. Such programs, which include *View* (except in CP mode), *Wordwise*, *ViewSheet* (except with linked files), and AMX *Super-Art* cannot save to a locked file, unlike those which truly keep a file open such as *Stop Press*, *ViewStore*, *ViewSheet* (in linked file mode), and *System Delta*, which can write data to a locked file.

The W suffix is a new one. This, when present, allows the file to be written to using either OPENOUT, PRINT# or BPUT. If the W flag is not set, then *Wordwise* could still save over the file, but *ViewStore* could not.

The R suffix allows a file to be read. Obviously, the R flag should always be set. The main reason for this setting is Econet-compatibility, where it makes sense for some files to be writable but not readable. When using *ACCESS on ADFS, always use the R flag.

E (execute-only) is a setting best avoided. If used, the W and R settings are ignored. When a file has been set with the E attribute, it can only be *RUN and not anything else. Also, an E setting cannot be undone by a further *ACCESS command. If you do find yourself accidentally setting a file to E, this can be undone using a utility published in Acorn Forum (February, 1988).



All the Basic keywords can be printed out from the Electron's ROM

One thing to remember about the *ACCESS command is that without any parameters it is not the right way to unlock a file, as it is on DFS. If you type this, the file will indeed be unlocked, but it will also be unreadable and unwritable!

When a file is first created, ADFS makes it unlocked, readable and writable. Generally your files should be set to WR where they need to be altered, and LR when they don't. Note that with the hierarchical structure, you can apply *ACCESS commands to a whole subdirectory, for example if you are in directory $, and a subdirectory called Files exists, *ACCESS FILES.*LR will lock all files within that directory, without actually entering it.

There are three ADFS commands used to move from directory to directory. *DIR is, I'm sure, familiar to you all. This is the command used to select another directory, so if you are at the root directory, (as you are immediately after a *MOUNT) and wish to enter the Files directory, then *DIR FILES will take you there. *DIR^ (up a level) will take you back, as would *DIR $. The name of the current directory is given immediately below the drive number at the top of the catalogue. Type *CAT to see it. If the root directory contains, say, two directories, called Files and Games, and you had selected Files, you can't just type *DIR GAMES. You must either specify the full pathname, which in this case would be $.GAMES, or use the ^ operator to go up one level, and then down into Games. The command would therefore be *DIR^.GAMES. As switching between a couple of directories is such a common requirement, a special command has been provided. *BACK, which never takes a parameter, will reselect the directory before the last *DIR or *BACK command. It doesn't matter where on the disc that was, as ADFS remembers the last directory.

*CDIR is a command to create new directories. It is followed by a name of up to 10 characters (similar to a filename). For example, *CDIR FILES will create a directory called Files which is within the current directory. You can of course create directories anywhere by specifying a full pathname, such as *CDIR $.GAMES. REVERSI. This would create a directory called Reversi in the directory Games which already exists in directory $.

One of the most frequent requirements when using a filing system is renaming and deleting files. Like DFS, there is more than one way of deleting a file – *DELETE will only delete one file, and works exactly like its DFS counterpart. *DESTROY will delete a number of files, ie,

```
*DESTROY TEMP.S*
```

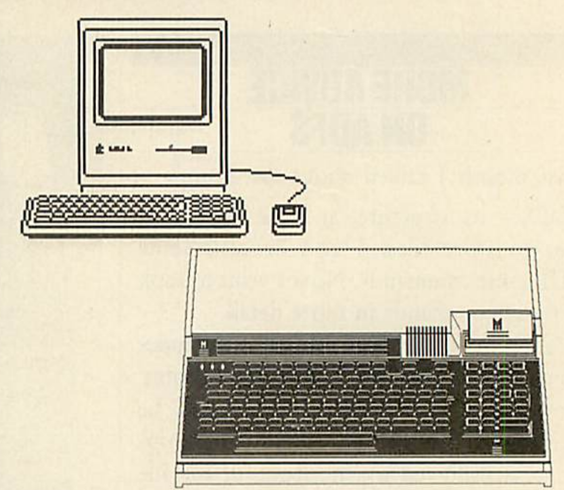
will delete all files in directory Temp which begin with S. A list of all such files is displayed, and you confirm the deletion by typing Yes followed by Return, rather than the simple Y needed in DFS.

*RENAME is also like its DFS equivalent, except that it also acts as a command to move files around directories. Following our example of the two directories Files and Games, you might want to move a file called Invader in Files to the Games directory. From within Files, the command *RENAME INVADER ^ .GAMES. INVADER would effectively move the file

MAC CONNECTIVITY

Screen»Mac – Transfers graphics between the BBC Microcomputer and Macintosh

Screen»Mac allows you to exchange bit-mapped graphics images between a BBC Microcomputer and a Macintosh.

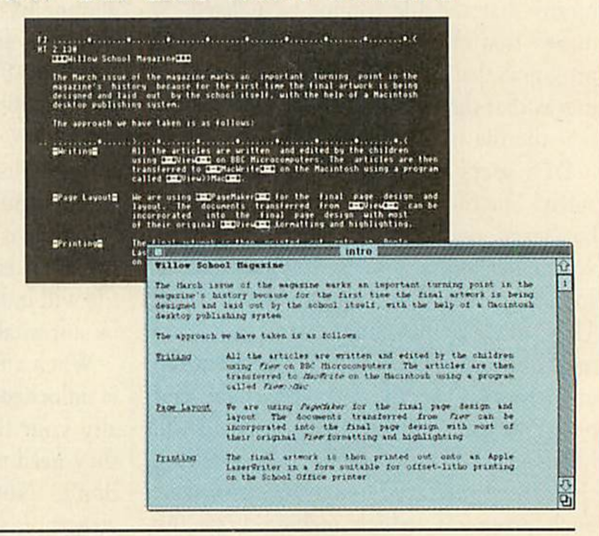


Applications include:

- Incorporate BBC Micro screen displays in documents created on a Macintosh, or in HyperCard stacks.
- Use MacPaint, and other Macintosh tools, to create graphics for BBC Microcomputer programs.
- Transfer photographic images to a BBC Micro using a Macintosh-based scanner.
- Use Macintosh clip-art in BBC software.

View»Mac – Transfers and converts documents to MacWrite from View on the BBC Micro

View»Mac converts documents from the View word processor on the BBC Microcomputer and Master 128, to MacWrite on the Macintosh. The resulting MacWrite file can then be edited, or imported into other Macintosh applications.

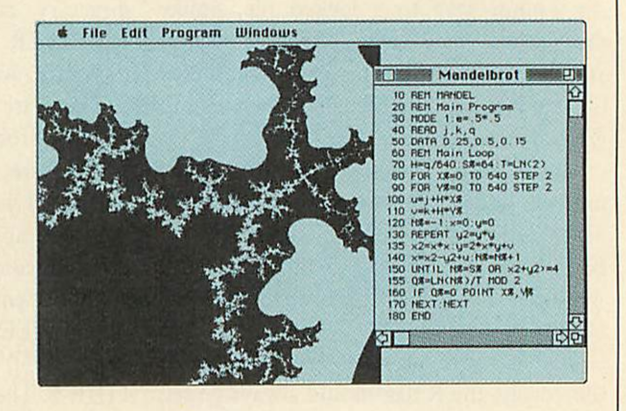


View»Mac will also transfer any type of file from the BBC Microcomputer; a catalogue of the DFS or ADFS disc is displayed on the Macintosh screen to allow you to select files or change directories.

View rulers and formatting, extended highlights, and stored commands, are all converted to their MacWrite equivalents.

BBC BASIC – Now available for Macintosh

BBC BASIC has become established as the major programming language used and taught in UK schools. Its structuring features, such as named procedures and functions with arguments, make it an ideal language for learning to program.



Now Macintosh™ owners can program in a version of BBC BASIC designed to behave in exactly the same way as on the BBC Microcomputer or Acorn Master 128, and interchange programs directly.

BBC BASIC for the Macintosh includes an integral editor, for the fast entry and editing of programs, and built-in menu commands for transferring programs to and from a BBC Microcomputer.

HUMAN▼COMPUTER INTERFACE·LIMITED

For more information on Mac Connectivity:
Human-Computer Interface Limited
25 City Road, Cambridge, CB1 1DP, England.
Telephone: Cambridge (0223) 314934

into the other directory. Unfortunately, the command does not take wild cards so if there were two files, Invader1 and Invader2, typing *RENAME INVADER* ^.GAMES.INVADER* would not work, and the error message 'Wild cards' is given. Also, *RENAME cannot be used to move a file onto another disc.

The *COPY command is provided for both these situations. It works in a way similar to the MS-DOS command of the same name, but not like the DFS command which was only for copying files to a directory of the same name on another disc. The first parameter of *COPY is the name of the file you wish to transfer. The second is the directory to which you want to transfer it. So, to move the two Invaders files mentioned above, you would type:

```
*COPY INVADER* ^.GAMES
```

You could also type a full file specification with

```
*COPY :0.$.FILES.INVAD
ER* :0.$.GAMES
```

which would have exactly the same effect. It is a good idea to get into the habit of typing full specifications, because then you don't have to remember which directory, or even which drive, is current. To copy the two files to the $ directory of disc 1, the command would be

```
*COPY :0.$.FILES.INVAD
ER* :1.$
```

As you might expect *COPY makes a copy of the files in the destination directory, but leaves the files in their original place as well.

Another command which is familiar from DFS is *TITLE which, on DFS, puts a title of up to 12 characters on the disc. The ADFS command extends this to 19 characters, but also allows you to put a separate title on each directory. This allows you to give a fuller description of the directory than allowed in the 10 character directory name, and also allows certain programs which use the title in DFS to run satisfactorily within a subdirectory on an ADFS disc, as the system call which reads a disc title returns a different string depending on which directory is selected. ADFS initially creates a title, which is the same as the directory name, for each directory. This can be changed by selecting the directory (with *DIR) and using the *TITLE command.

In the next article on ADFS, I'll be looking at libraries, and covering some of the points raised by readers in this series.

£5

A PIECE OF STRING$

Peter Jennings, from St Albans, has sent some useful suggestions for making use of Basic's rather neglected STRING$ command. You often see programs with long lines of dashes to make lines across the screen, often produced with a command something like

```
PRINT "----------------
-----------------------"
```

This works of course, but is a very inefficient method. A much neater way is

```
PRINT STRING$(39,"-")
```

It is too ghastly to contemplate writing a whole screenful of lines with a Print command, although someone is sure to have done it at some time. Peter's first listing, which uses STRING$ and a simple loop shows the easy way to do it. To make it a full screen grid, replace the existing Print line with

```
PRINT "!";STRING$(19,"
_!")
```

Peter's second listing uses a similar idea to make a box of stars which can be used as a title panel. To add anything to the box, change the Tab position in the last line to move the cursor to where it is required. There is a very practical use for STRING$ in the third listing. This prints out a blank cassette inlay on any printer that supports condensed characters.

The STRING$ command is not only used for display. Because variables can be used in the length of the string, a simple barchart can be constructed using the STRING$ function to print the correct length of bar. The final listing reads some data and generates a chart. You can try changing the numbers in the DATA statement (don't use anything more than about 30) for different charts.

£5

ELECTRON KEYWORDS

Here is a quick hint from Robert Gahan of Dublin which prints out all the Basic keywords from the Electron's ROM. Robert recommends it for beginners in programming, to remind them of the commands that are available. I won't tell you how it works, but suffice to say that the program won't work as it stands on other Acorn machines. BBC B and Master users can amuse themselves by finding the correct values to replace &8071 and &836B on their machine – it's different for every version of Basic.

£5

A BROAD VIEW

Amit Jalan writes from India with an excellent tip for *View* users. You may not realise this, but *View* will work in up to 132 columns. You can use this size of layout for tables and other complex layouts, or as Amit does, just to get more text onto the page. This is how to do it.

Enter *View*, and press CTRL-f5 to create a new ruler. Delete the rightmost '<' symbol from the new ruler, and hold down the fullstop key. Fullstops will appear and the ruler will start to scroll sideways (and any entered text with it). When this stops and the computer beeps, delete one fullstop, and type a '<' symbol to denote the new ruler end. You now have a 132-column mode, and you can start typing into it, or reformat existing files with f0 or the Format command in the usual manner.

To print a page of this size, you will either need a wide body printer, or you'll have to use condensed text. The printer must be put into condensed mode, so save your text, enter Basic, type:

```
VDU 2,1,15,3
```

and then return to *View*. Now print your file, either from disc, or by loading it back and typing PRINT. The VDU codes will have selected condensed text mode, and 132 columns will fit on the page. If you want even more space then you can set your printer to produce micro size print. To do this, type

```
VDU 2,1,15,1,27,1,83,0,1,65,5
```

and not only will you get 132 columns but about 100 lines as well (on standard 11-inch paper). You must have an Epson-compatible printer to do this. Note that if emphasised print (ESC "E") is set on your printer, either by DIP switch or software code, it must be deselected before condensed mode will work. To do this, insert 1,27,1,66 after the first 2 and before the following 1. Each number must be separated by a comma or a space.

All submissions – hints, tips, programs or simply ideas – should be sent to Hints and Tips, Acorn User, *Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ.*

ARC AGORA

ALL FOUND OUT

Track down all those mislaid files, discover the podule system of adding on hardware and we have two short routines you may find useful

Dave Acton

£10

NO MORE MISLAID FILES

The first offering this month is a filing system utility to help you track down those files mislaid in some long-forgotten subdirectory. It's based on a program by Paul Dellar who receives a tenner for his programming idea.

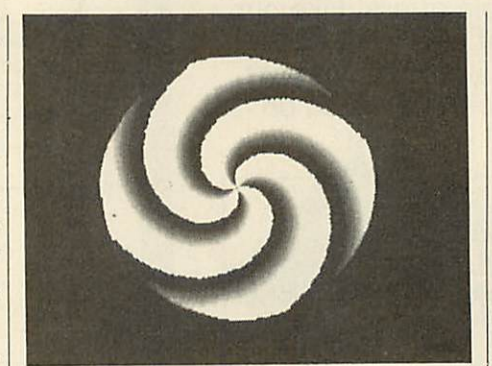
Listing 1 contains the source code. When run, it is saved in the current library as *FIND. To search for a particular file, simply type *FIND <filename>. The filename may contain wildcards, so *FIND Listing1, *FIND Prog* and *FIND #a*b* are all valid. A list of all filenames that match the one given is displayed, showing their full pathnames.

The utility employs one function of the filing system SYS call OS_GBPB. If this routine is entered with R0 containing 10, a specified directory is examined for files that match a given (wildcarded) name. The actual entry parameters are:

- R0 10
- R1 Address of name of directory to search
- R2 Address of buffer to hold names of files that match
- R3 Number of files to examine
- R4 First entry to read
- R5 Size of buffer to hold names
- R6 Address of (wildcarded) filename

*FIND calls OS_GBPB in two places. The first time establishes whether any filenames in the current directory match the one given; the second checks for the existence of subdirectories. If a subdirectory is found, its name is appended to the current directory name (stored at '.name') and the routine calls itself to continue the search further down the directory tree.

After calling OS_GBPB, registers R3 and R4 contain information about the progress of the search. R3 contains the number of objects read. Note that even if this value is zero, there may still be more matches to find – a zero value merely indicates that the last lot of names looked at did not match the wildcarded name. It is register R4 that must be checked to see if the search is over. R4 should initially be loaded with zero and, after each call to OS_GBPB, the value of R4 is updated to point to the next set of filenames. When no more filenames are available, R4 is returned containing -1.



Rotating spiral using a grey-scale

For simplicity, *FIND only looks at one filename at a time. This has little effect on speed since the operating system 'caches' directory information in memory.

The OS_GBPB calls put all the information in the parameter block at '.buffer'. The first 16 bytes contain the file information (load and execution addresses, attributes etc) and the next four contain the file type. To search for subdirectories, the wildcard name '*' is used so that all names are considered and any with file type 2 are noted as directories. Following the file type is the filename itself.

Note that the 'X' form of SWI OS_GBPB is used to prevent errors. In general, all SWI calls from within 'transient' utilities should use the 'X' form for SWIs – if an error condition happens, no error message is printed, but the routine returns with the overflow flag set. So, this way, you can deal with the errors yourself.

USER PODULES

Many readers will have considered adding hardware to their Arcs, in the form of 'podules'. Despite the lack of information on the subject, the podule system has been well thought out, and the appearance of 'development cards' should make building prototype podules a little easier.

Many podule developers will want to include software on their cards in the form of ROMs. These must conform to strict specifications if they are to be regarded as 'Acorn conformant' and these specifications are outlined here with an example.

Those of you who are familiar with the ROM filing system of the BBC micro will recognise many similarities with the Archimedes' podule system. Each podule ROM contains a header and then a series of 'chunks'. So that the podule manager knows what's going on, a podule ROM also has a 'chunk directory' that contains details of all the chunks that follow. Chunks can be of various types. The simplest is the 'description' type which is simply a name. If your podule ROM contains a description chunk, this will be shown when you type *PODULES. Another useful brand of chunk is the 'module' type. If your podule ROM contains a module, this will be downloaded automatically and will appear in the module list if you type *MODULES.

Another important sort of chunk is the 'loader' type. This is a short piece of code that enables bytes to be written to and read from your podule. The loader code is copied down into RAM upon reset and the podule manager keeps a note of which loader to call for each podule. If your podule ROM does not contain a loader, most of the podule manager SWI calls will not work.

Listing 2 is the source code for a demon-

stration podule ROM – 'AUpod'. This contains an example of each of three types of 'chunk': a loader, a module and a podule description. When run, a file called 'AUpod' is saved and this can either be blown into EPROM or loaded into RAM if your podule card contains it.

The first three bytes of the podule contain flags. In general, only one bit need be set – bit 0 of byte 1. This indicates that a chunk directory follows the header.

The next two bytes contain a product type, and the following two a manufacturer number. These have been set to zero in the example, although if you are intending to sell an add-on yourself, you should write to Acorn asking it to allocate your own numbers. The next byte is a country code (0 for UK) and then eight padding zeros are assembled.

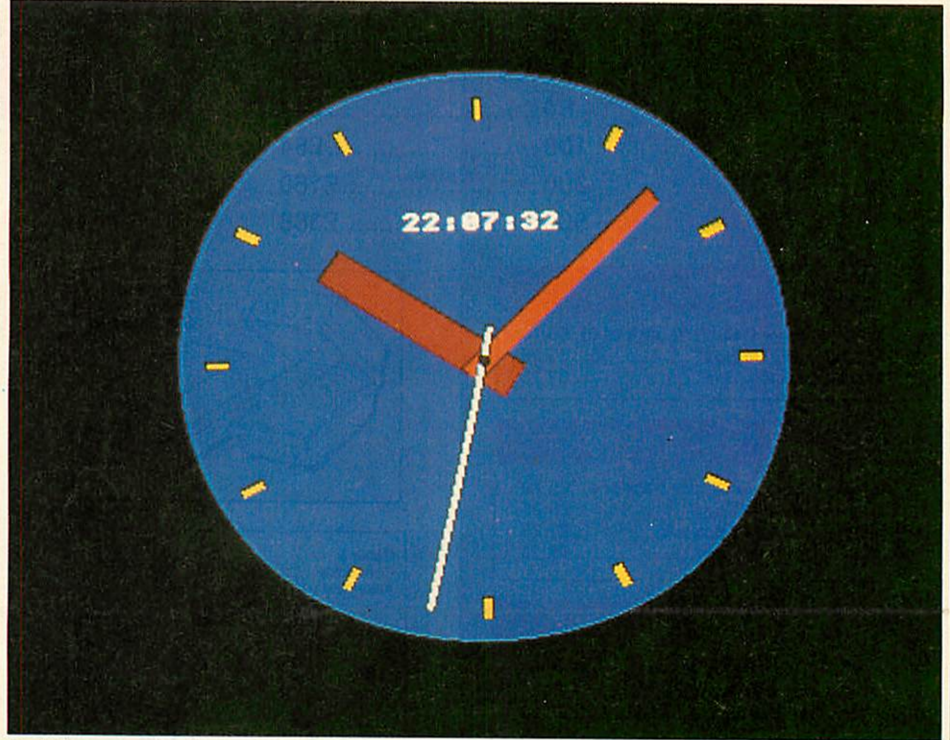
Next comes the chunk directory itself. Three chunks are supported in the example and the macro FNchunkhead is used to assemble the entry for each. The function takes three parameters; the start and end offsets of the chunk and a byte of flags. These are compiled into eight bytes. The first contains the flags, the next three the chunk size and the last four the chunk start address.

The top bit (bit 7) of the flag's byte should always be set. Bits 4 to 6 contain a value describing the chunk and only two values are useful: 0 and 7. If bits 4 to 6 contain 0, bits 0 to 3 contain a code further defining the chunk. Code 0 means a Loader chunk, Code 1 means Module, Code 2 means BBC ROM and Code 3 means a chunk containing sprite definitions.

If bits 4 to 6 contain 7 (that is, if they are all set), bits 0 to 3 again contain a descriptive code. The most useful values are 1 for a serial number, 2 for the date of manufacture, 4 for the place of manufacture and 5 for a podule description. So, for example, a module chunk has type byte %1000001 (&F1) and a description chunk has type byte %11110101 (&F5).

The loader chunk begins with four pointers – only the first two are used in the example. The first points to a routine to read a byte from the podule and the next to a routine to write a byte. In the table is a summary of the contents and availability of the ARM registers upon entry to these routines:

R0	Data to write, byte that was read
R1	Address to write to within podule
R2-R3	Nothing (may be used)
R4-R9	Must be preserved
R10	Nothing (may be used)
R11	Address of hardware base for podule
R12	Must be preserved
R13	Stack pointer
R14	Return address
R15	Program counter



David Lawrence's giant coloured clock – now you need never be stuck for time

The actual address being written to or read from is calculated by adding the hardware base address in R11 (with its bottom bits cleared) to four times the address in R1. This is because the bytes of the podule ROM are seen as being four bytes apart by the Archimedes. Only 4k of podule ROM can be 'paged in' at any one time so if you wish to include bigger ROMs you will need to incorporate a paging register.

The module chunk is just an ordinary module. Note that in order for the module offsets to be calculated correctly, P% is reset to 0 before assembling the module part. The variable P2% is used to keep track of P% while the module is being assembled so that subsequent addresses are not 'skew-whiff'. The description chunk is just a zero-terminated string.

Once assembled, the podule ROM image clearly needs to be installed in a podule. The program was developed using an Atomwide Expansion Card fitted with RAM and so a short program was needed to 'blow' the image into the RAM. Listing 3 literally 'pokes' the ROM image into the podule's RAM. It requests a filename and podule socket, and stores each byte of the file in the podule at the specified address. This is done in Supervisor Mode. (Note that no error-checking has been included in listing 3!) The 'real' location of the four podules are:

Podule	'Real' location
0	&3240000
1	&3244000
2	&3248000
3	&324C000

Having run listing 3 and entered the name 'AUpod', press CTRL-Break and type *PODULES. You should see 'Acorn User Podule' in the list.

£5

GRAPHIC ODDMENTS

We finish off with a couple of 'shorts', each of which earns its author a fiver. Listing 4 on the yellow pages comes from Jeroen Boomgaardt of the Netherlands, and illustrated some possibilities of greyscales. Listing 5 is from in-house regular David Lawrence and was written out of necessity – his digital watch broke down. Stick it in your library – you never know when it might come in handy.

Published items can earn you up to £20, so send your programs, hints and tips to: Arc Agora, Acorn User, *Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ. The address for Atomwide Ltd is: 23 The Greenway, Orpington, Kent.*

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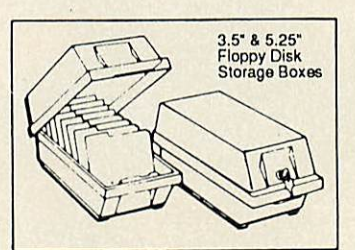
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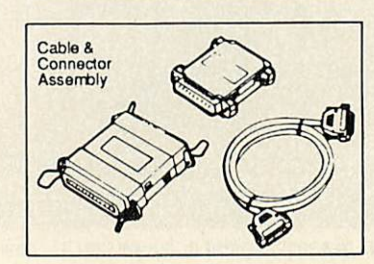
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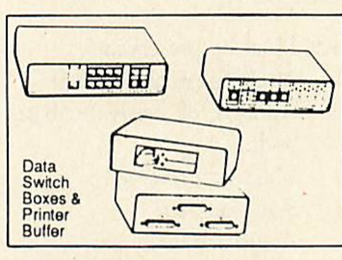
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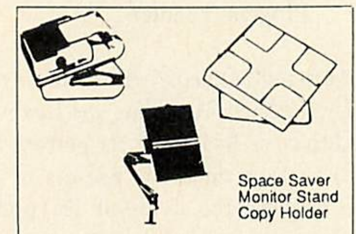
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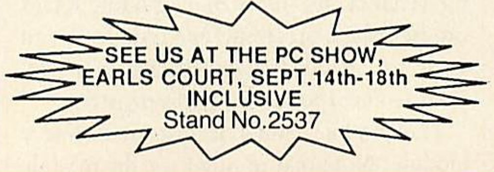
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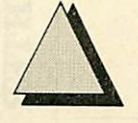
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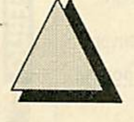
A FAX modem podule that simply plugs into any Archimedes computer, and then into any standard telephone socket. It is possible to connect a conventional phone in parallel.



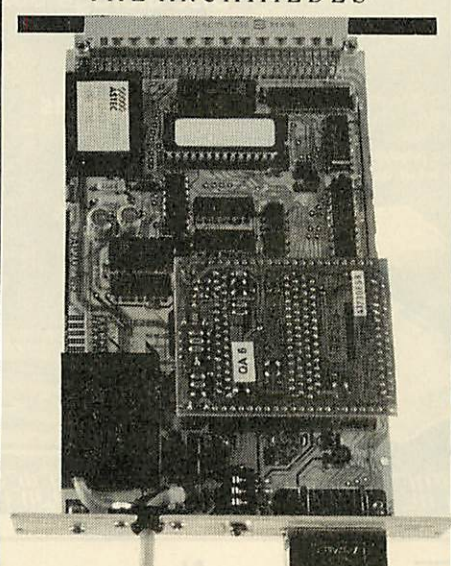
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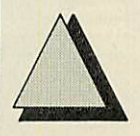
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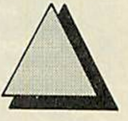
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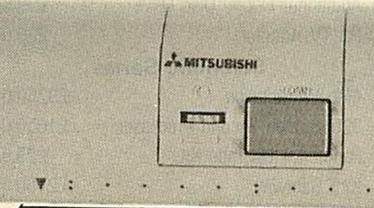
Most facilities are available from simple logical star commands, such as *DIAL Fred and *SendFAX file office.

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TAKING SHAPE

Spend hours trying to construct any of three cuboids with our *Polyominoes* routine – guaranteed to stretch your mind

Don Scales

Pentominoes are shapes made up from five squares – twelve different shapes are possible using every combination of five squares, ignoring mirror images and so on. These shapes are often known by names like I, X, W, L and so on; each resembles a letter. I first read about the existence of pentominoes in a book by Martin Gardener, *Mathematical Puzzles and Diversions.*

By using all these two-dimensional shapes, shown opposite, it is possible to construct four different rectangles. Many long evenings have been spent with this puzzle, and it has proved very popular with friends.

I later read that if you use cubes instead of squares, it is possible to build up three differently shaped cuboids. A great deal more time was wasted, until I managed to build all three from the twelve three-dimensional pentominoes. The *Polyominoes* program in the yellow pages allows you to play with these pentominoes, and will give you many hours of pleasure, and frustration, trying to build up any of the three cuboids.

Each of the pentominoes used in the program is made up of five cubes: the shapes themselves are essentially flat, they are just boxy versions of the two-dimensional ones. There are of course lots more shapes that can be constructed using five cubes, but we are limited in this particular game to the twelve that have already been derived from the two-dimensional set.

To use the program, type in listing 1 and CHAIN it. The length of the program and the shortage of memory means that on a model B, PAGE must be set to &1100 or lower before you start. So from disc, you should start it up like this:

```
PAGE=&1100
CHAIN "POLY"
```

Or you could include a line like this:

```
0 IF PAGE &1100 THEN PAGE
=&1100:CHAIN "POLY"
```

On a cassette-only model B or a later machine, you don't need to lower PAGE. Make sure that on a B+, Master or Compact, you turn shadow memory on with *SHADOW before you start – this ensures that you've got enough memory to run the program.

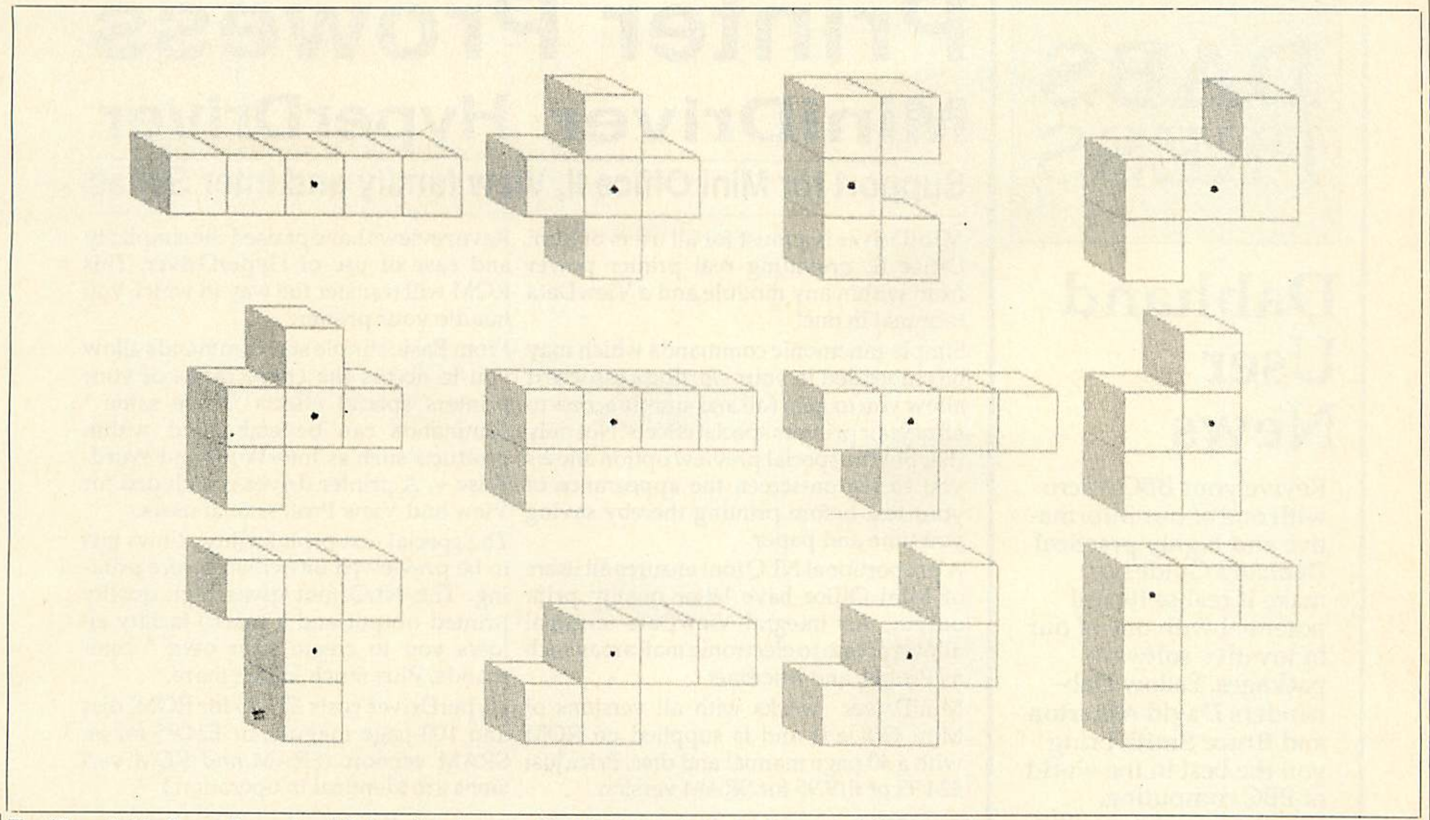
It will also run on an Electron, but only from tape, or with an add-on DFS. With ADFS and the Plus 3 interface, you can't lower the value of PAGE enough to give the program room to run. Although the program will also run on the Arc, it may be necessary to change the control keys slightly, as the underline key is not as convenient as it is on the BBC micro keyboard. Change line 320 to include '' instead of '–'.

When the program runs, it first asks you which shape of cuboid you want to build. There is a choice of three: a five by four by three box, a flatter six by five by two box and a thin 10 by three by two box. Indicate the one you want, and the main *Polyominoes* screen will appear.

The screen display is divided into three important sections. The box at the right of the screen shows your progress cuboids. The cubes are built up, within a dotted outline of the cuboid. One of the blocks is highlighted with an outline 'cursor'; this is where the next polyomino will be placed. The cursor can be moved around with the

FUNCTIONS AND PROCEDURES

PROC place	used FNfit to decide whether shape will fit in box
PROCputit	marks shape as used in lower window and in C%(), and puts shape into G%(), redraws whole box
PROCdelete	removes shape from G%() array, marks shape as unused, redraws whole box
PROCshowall	draws all shapes in the box, from back to front so hidden boxes are automatically drawn over
PROCmove	undraws old box cursor, and redraws new cursor
PROCbase	draws rear edges of cuboid box
PROCoutline	draws front edges of cuboid box
PROCredraw	decides if shape is used – if not, draws in left window with PROCdraw
PROCrot	uses six FNrot functions to rotate shapes within the C%() array, then redraws shape in left window
PROCdraw	draws shape in left window
PROCcube	draws a single cube
PROCshape	draws shapes in lower window from data
PROCdot	draws each part of shape in lower window
PROCextract	sets x, y and z co-ordinates of one cube from number stored in C%()
FNfit	decides whether shape overlaps another or protrudes beyond box
G%(,,)	array showing which shapes occupy box
C%(,)	contains x, y and z co-ordinates of each shape. (n,0) shows whether shape is used
A%()	temporary



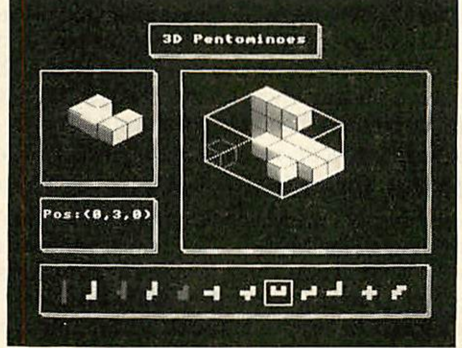
The 12 available three-dimensional Polyomino shapes – the black dots indicate the central 'keystones'

arrow keys: the up, down, left and right arrow keys move the cursor around one level of the cuboid, and you can use the adjacent '/' and '' keys to move up and down within the cuboid.

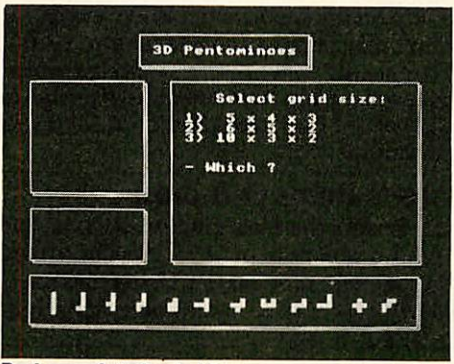
The second important part of the screen is the lower window. This contains all the polyominoes, with ones you've already used in red and the ones that you still have to use in yellow. The current shape is highlighted in a box, and you can select the shape with the '<' and '>' keys. Confirm your choice with the Space bar.

Pressing Space moves the selected shape into the left-hand window, which then allows you to manipulate the polyomino until it lies in the correct orientation to fall into the cuboid on the right. The X, Y and Z keys rotate the polyomino in three different ways, about its three axes, and the lower case x, y and z keys rotate in the opposite directions. Each time you rotate the shape, it is redrawn in its new position. You can turn the shape as much as you want, until you feel it will fit in the cuboid box. Once you have it facing the right direction, you can press Return to transfer it to the cuboid.

The cursor in the cuboid shows where the shape is going to be placed. On each polyomino, there is one 'central' block of the five indicated by being outlined differently to the other four – it looks slightly larger than the other cubes. This is the part of the shape that falls into the space occupied by the cursor in the cuboid; it is the 'keystone' of the polyomino.



Choose one of three box sizes



Part completed cuboid

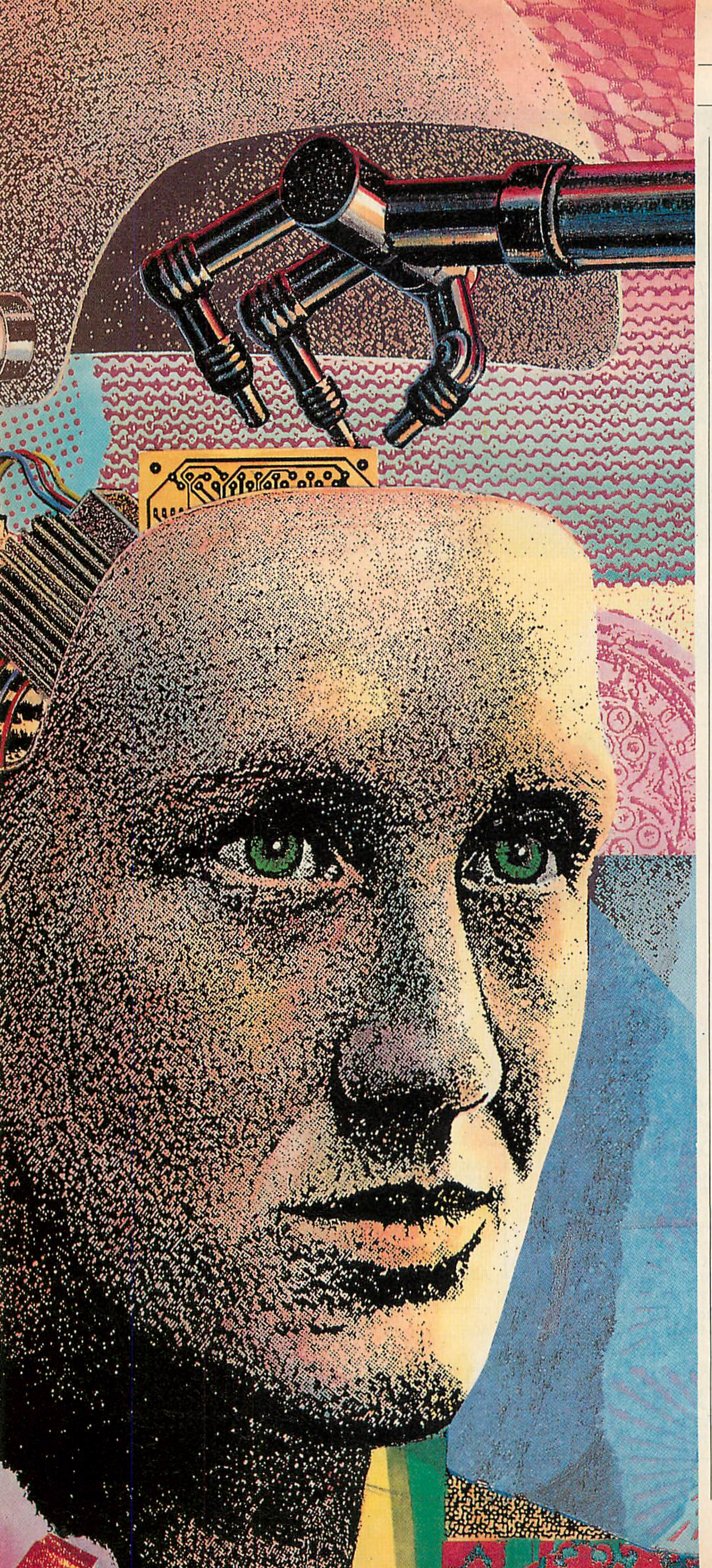
You can quit the game at any time by pressing Q; this gives you the choice of ending altogether, or choosing a different cuboid to restart with.

Once you've put in a couple of polyominoes, you'll find that it becomes more and more difficult to place new shapes into the box – you'll get errors like 'Outside box' or 'Overlaps' when the shape you've selected won't fit in the space you have selected with the cursor. This happens either when part of the polyomino would project outside the box, or into a block already in the box. It may be possible to fit it in by altering the orientation, by rotating it, or it may be possible to move the cursor to somewhere it will fit. Or you may just have to select a different shape to try.

You can't select a shape you've already used – but you can delete any shape and replace it. To do this, select the shape with the box cursor in the lower window, then press Delete. This removes it from the cuboid, and replaces it in the list of available shapes at the bottom. But remember, taking a shape out leaves a hole, and you'll have to fill that with other blocks.

You will also have problems after a few shapes are put in, because the rear of the cuboid box may be obscured, and small holes you have left unfilled may become invisible. For this reason, it is vital to build up the polyomino pieces from the back of the box. This is the essence of the game; you'll have to think very hard about which shape you want to use next. It doesn't sound easy and believe me it isn't, and if you do succeed, you certainly deserve a 'Well done' message.


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We had barely arrived back at the Towers from our holiday in Kerkira when the problem became apparent. The first symptom was a trail of the finest Towers notepaper, leading to the bedroom of my darling daughter. Each sheet started 'Dear Elleni', but then tailed off into empty space. The better ones had a couple of sentences written on them. The heap of paper was growing by the hour, and servants had to be sent out to replenish stocks.

Keen to stop the waste in this age of the 'paperless office', I tracked the culprit to her room. She told me that she was trying to work out what to put in a letter to her new Greek friend. I sat down with a new pencil, and took a clean sheet of paper.

'It's a letter to a friend,' I prompted, 'so what do you think we should put in it first? What would you like to hear from her if she wrote to you?' And so it continued, with both of us making suggestions about what the letter should say, and writing down ideas as they came.

Once done, the plan was written out again with small points grouped together under larger headings, and then again with the headings in order. We had done it! We had collected ideas, sorted them, sequenced them, and we were now ready for a quick burst of wordprocessing based on the plan we had just created.

What we had done was to create a way of processing ideas, so that a structure for a letter could be created. For many adults and children, writing is made doubly difficult because it's hard to order your thoughts coherently. This structuring and sequencing of information is a skill which needs to be encouraged. One way of doing this is using an ideas processor.

Another typical idea-generating and planning activity is called 'brainstorming' – one method is shown in figure 1. Here, ideas on a specific topic are added to a notepad or flipchart device. Once the raw, random, thoughts on the subject are exhausted, the ideas are linked together into subgroups, and the subgroups are linked together under headings.

The headings then need sorting into a priority order, as do the subheadings in any one major heading, and the points in any one subheading.

As you can see from figure 1, even after collation, the structure may still be quite woolly and fluid, particularly if the time between planning and writing is long.

The complex task of structuring

GET THE IDEA

Got a letter to write, a presentation to make? Perhaps your micro can help you order your thoughts with our ideas processor

[redacted]

Joe Telford

thoughts can be supported by the computer using an ideas processor. In this way the process, from thinking about a subject to fleshing out the outline, can be done entirely by computer. The ideas processor can then pass on the outline to a word-processor; this will minimise errors like forgetting some important point through constant redrafting. Take a look at figure 2, the output from our ideas processor, which was used to reprocess the diagram shown in figure 1.

The layout of the finished product is easy on the eye and it can also be used as the basis for wordprocessor work.

Planning and sequencing writing

Essentially, an ideas processor can be used for any task where a structure for thought is needed. Typical examples include general writing of manuals, articles and documentation, and presentations like speeches, lectures or agendas. The structuring discipline is also useful for project work in schools and colleges perhaps in craft, design and technology, information studies, science, environment work and so on.

In addition, an outline plan is often easier to follow in retrospect if the writing or presentation is being evaluated. The ideas processor output can be regarded as a summary of work being done.

So, an ideas processor is simply a software tool, which allows notes to be entered, changed, moved, sorted and sequenced, so that at the end of the day an overall plan of attack for a speech, technical manual, or presentation can be mapped out. The actual power of the processor is that it is quite easy to sort out a priority of ideas, switch them around if that is necessary, and then present them in various ways.

Ideas processors, often called 'document outliners', exist for most computers, and younger *Acorn Users* may already have come across packages like *Pendown* which contain similar devices.

Most ideas processors use a hierarchical structure, so that ideas can be added under headings and subheadings. Once these ideas are entered, they may need to be changed, and modified, either by altering them under a heading – promoting a subheading to a heading perhaps – or by moving them between headings.

In addition to these fundamental features, most ideas processors give access to filing operations, as well as allowing you to print out information in different ways.

Using an ideas processor

Before working with our Jottings ideas processor, let's look at the features available. The main need in designing the program was to be able to see as much of the plan as possible, down to the finest detail, and it is here that this processor differs from most of the others on the market. Another important point was that as far as possible the whole operation should be controlled via function keys. This is achieved using the function key overlay shown on page 63. Notice that the keys are split into four areas, idea processing features, filing features, print-out features and Reset buttons.

In addition, the Jottings ideas processor was designed to work with any Acorn computer supporting either shadow screen memory or a co-processor. It will operate with all filing systems except Tape, although it may be slow using the early versions of the Network Filing System (up to 3.60). An upgrade to the Advanced Network Filing System is, therefore, strongly advisable.

To use the Jottings processor, just type in the listing in the yellow pages – it's long, so you'll need to check it carefully, and save what you've done at regular intervals. (Alternatively you could get the *Acorn User* monthly disc.) Save the finished program using the filename 'Ideas'. The next stage is to build an autoboot file to start off the program automatically. This can be done with:

```
*BUILD !BOOT
0001 *BASIC
0002 MODE 128
0003 CHAIN "IDEAS"
ESCAPE
*OPT4,3
```

I recommend that a whole disc is given over to the program, simply because it can then save your ideas as files on the same disc. Once the disc is set up, you can start to use the program in earnest.

Pressing Shift and Break will start the program and display a front page banner. Press the space bar to start the program proper, at which point the screen should look like figure 3. The screen has three active areas – the top part is the area where you communicate with the program for everything *except* the input of ideas. It's here you see messages that tell you what is happening, or reports of errors which may occur. Or you may simply be prompted to answer a question – the name of a file to load, for example.

The second area of screen is the space available for the ideas: this fills up as you add your notes. An 'END' bar appears only when we are running out of memory, and the dashed lines represent blank paper. To begin with, the top line is highlighted and marked with the expression 'Ttl :' you should then type in a title for the plan you are creating.

The lowest area of the screen shows the title of the package and, in the space to the right of 'Ideas Processor', it will show the name of the last filename you used for saving or loading.

As the plan is built, you can move around it using the cursor keys. Only the up and down arrow keys work, and they behave fairly intuitively. Up moves one idea up the screen and down moves one idea down the screen. Combined with Shift, they move one heading up or down, and with CTRL they move straight to the first or last item.

The up and down keys will also wrap from first to last idea, so pressing the up

ILLUSTRATION BY SIMON FELL

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Dabhand User News

Alerion is the first traditional shoot-em-up game for the Archimedes brought to you by the experts: **David Atherton** and **Bruce Smith**. Written in ARM machine code it uses the spectacular speed, sound and colour of the Archimedes. We reckon that it's impossible to finish and will give you hours of addictive fun for just £14.95.

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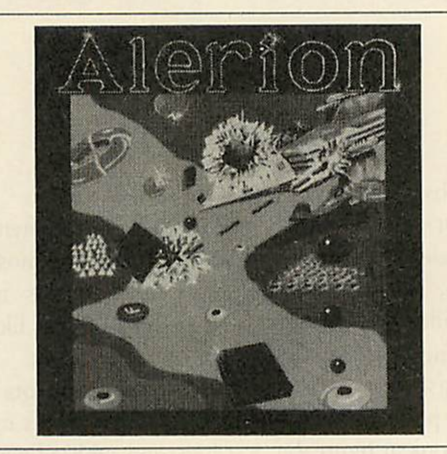
Alerion

Archie Arcade Action!

"A welcome return to the traditional shoot-em-up"

Alerion - an eagle without beak or feet is the Arcturian term for impossible and the codename for your mission in this exciting all action game.

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Alerion is a welcome return to the most popular of all computer games but utilising the power speed, sound (not A305) and superb graphics only available on the worlds fastest computer. The Archimedes.

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arrow on the first item will take you back to the last item in the plan. Pressing the down arrow will cause the opposite to happen. Note also that the movement with the Shift key is from heading to heading, skipping any subheadings between. Titles are also counted as headings.

To add an idea you first move, using the cursor keys, to the point where you want the idea to be added. Normally this will be on the last line. Now press function key f0 and the screen will change, to move all the ideas below the insertion point one place down. The word ADD> will appear and you have 65 character spaces to add your idea. Once you have added it, press Return and the screen redisplays the ideas with the new one in place, set to the status of a Title. See the descriptions of PROMOTE and DEMOTE below to change its status. Figure 4 illustrates this process.

Changing an idea is very similar. First you move to the idea to be changed using the cursor keys, then press f1. The screen changes, the word CNG> appears, and you get 65 characters to retype your idea. The message window displays the original contents of the line, so you can always refer back to it. Once you're happy, press Return and the screen redisplays the ideas with the change in place.

You can delete an idea too. Move to the idea to be deleted using the cursor keys and press f2 or Delete. A message invites you to press Y to confirm the deletion, or N to cancel. Once one of these has been chosen, the screen redisplays the idea with the line removed and any blank lines tidied up. To join two ideas on consecutive lines, first press f3, then follow instructions in the message window. These invite you to move to the first of the lines and press Return. If the total length of the ideas is greater than 65 characters, you then have the option of cancelling the join. Otherwise, the join takes place, the following line is deleted, and the screen display is tidied up.

Promoting and demoting ideas is an important feature of an ideas processor. All the ideas fall into a hierarchical order. The highest level is title, followed by heading, then subheading, and finally the lowest level, the point. Any idea can be placed at any level simply by moving the cursor bar to it and pressing Shift with f0 or f1. As an idea moves down the hierarchy, it moves to the right at five-space intervals. If an idea is promoted it moves left again. This hierarchy is not just a matter of layout – it also allows us to move and copy whole blocks of ideas, mainly when resequencing points.

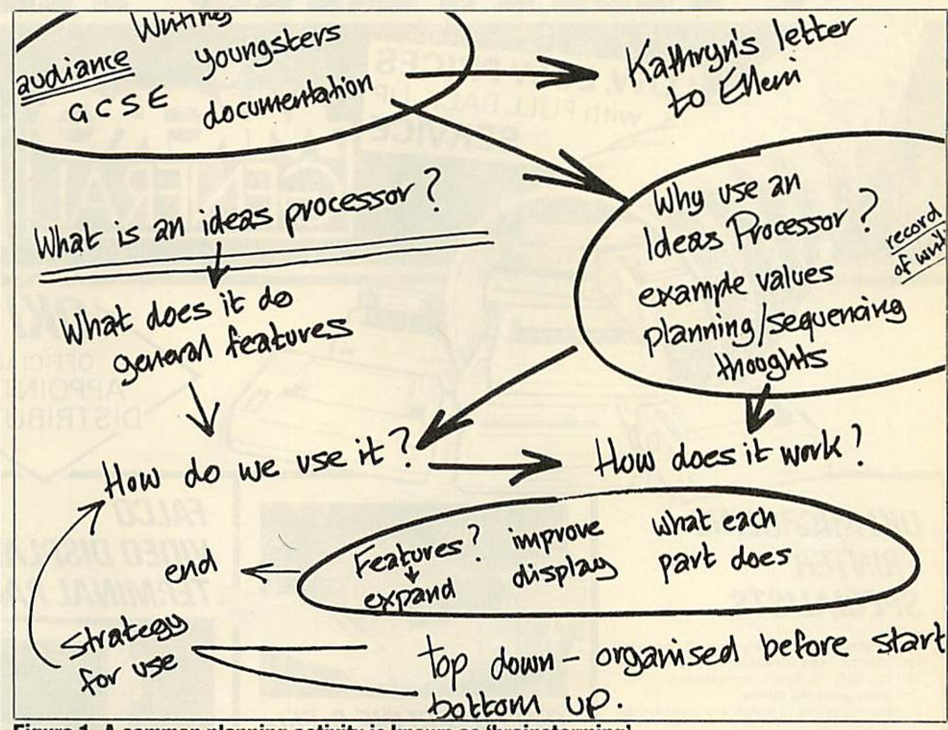
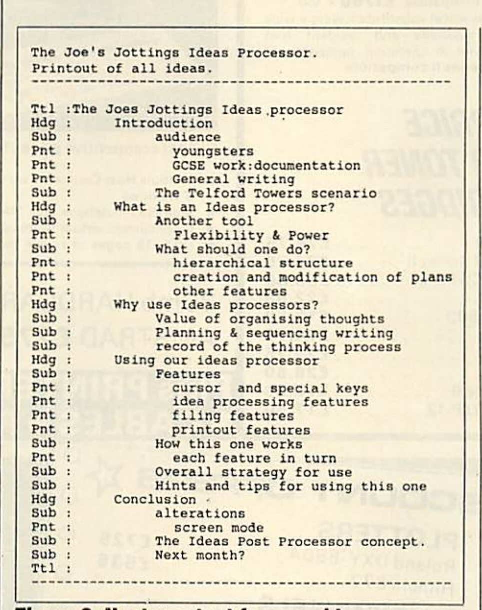


Figure 1. A common planning activity is known as 'brainstorming'



```
The Joe's Jottings Ideas Processor.
Printout of all ideas.
--------------------------------------------------

Ttl :The Joes Jottings Ideas processor
Hdg :     Introduction
Sub :          audience
Pnt :            youngsters
Pnt :            GCSE work:documentation
Pnt :            General writing
Sub :          The Telford Towers scenario
Hdg :     What is an Ideas processor?
Sub :          Another tool
Pnt :            Flexibility & Power
Sub :          What should one do?
Pnt :            hierarchical structure
Pnt :            creation and modification of plans
Pnt :            other features
Hdg :     Why use Ideas processors?
Sub :          Value of organising thoughts
Sub :          Planning & sequencing writing
Sub :          record of the thinking process
Hdg :     Using our ideas processor
Sub :          Features
Pnt :            cursor  and special keys
Pnt :            idea processing features
Pnt :            filing features
Pnt :            printout features
Sub :          How this one works
Pnt :            each feature in turn
Sub :          Overall strategy for use
Sub :          Hints and tips for using this one
Hdg :     Conclusion
Sub :          alterations
Pnt :            screen mode
Sub :          The Ideas Post Processor concept.
Sub :          Next month?
Ttl :
--------------------------------------------------
```

Figure 2. Neater output from our ideas processor

On pressing Shift-f2 you will see messages indicating how to proceed. Briefly, you move to the point, subheading or heading you want to move and press Return, then move to the line where the idea should be inserted, and again press Return. Then wait as the program performs the move, and tidies the screen. Subheadings are moved along with their subsidiary points, and headings are moved along with the subheadings and points they contain.

Ideas can also be copied. By pressing Shift with f3 or pressing the Copy key, the program can start copying. Again, you're prompted to move to the point, subheading or heading you want to copy and press Return. Then move to the line above where the idea should be copied and press Return, then wait as the program performs the copy, and tidies the screen. Again, all subheadings are copied, along with any following points.

Filing system facilities

The program allows simple control of saving and loading as well as cataloguing the disc and deleting files.

For cataloguing, press f4 and the screen will change to display a catalogue of the current disc or directory. Press Space and the original ideas display will return. To load a file, press f6 and the message 'load file name:' will appear. Type the name in seven or less characters, then press Return. This loads the file. If the file does not exist, the process is error-trapped. Once a file is loaded, it appears on screen with the cursor bar at the first item.

If you wish to save a file, you press f5 and you are asked whether you intend to save the ideas as a file for use with the ideas processor (an ideas file) or as a file for use with a wordprocessor (a straightforward ASCII file). You press 'I' or 'W' as appropriate, and then the message 'save file name:' will appear. Type the name in seven or less letters, then press Return. Once this is done, the file is saved in the format specified. After saving, the screen is tidied for further action. If a file of the name you have decided to use exists already, the program just cancels the saving.

To delete a file, press f6 and the message 'Delete file name:' will appear. Again, type

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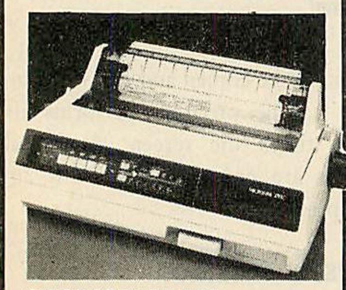
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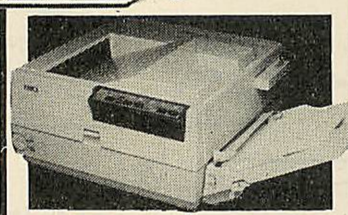
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the name in seven or less characters, then press Return. This deletes the file. If the file does not exist, the process is error-trapped. Once a file is deleted, the program just continues as before. Note that pressing Return by itself in Save, Load or Delete will cause the program to catalogue the disc, then return to the appropriate Load, Save or Delete routine.

The printing function is started by pressing f8. This allows you to obtain a hard copy of the plan at any stage, in total, as a set of headings, or as the contents of one heading. You just need to follow the instructions in the message window for the one you want. Once the message window blanks out, you can continue working on the keyboard.

If you wish to draw up a new plan or quit the program, you press f9. This allows you to leave the program and return to Basic, although you must satisfy a 'safety lock' by answering 'Y' to a 'Do you really want to leave?' question. Shift with f9 gives you the option of restarting the program, clearing out any old plan in memory. Again this is safety-locked, and so can be avoided if accidentally invoked.

It's worth knowing that although Escape will cancel any action, there is no guarantee that the cancellation will be at a safe point, especially if commands like Move, Copy, Cat, Add or Delete are actually processing – they could be half-way through. To maintain the quality of your data, use Escape only if the program is waiting for your input of data or cursor key movements.

Overall strategies for use

There are two main ways of using the ideas processor. The first is the top-down approach, whereby you follow a particular strategy for building a plan. ADD the title, then the main headings. Then for each heading add the subheadings. For each subheading, use the Add facility for the points to be raised and, check the finished product, refining if necessary. But, for this strategy to work effectively, it is essential that you have an overall view of the document before you start.

The second approach is more flexible, more like typical 'brainstorming' – the bottom-up strategy, which works as follows. Write down any ideas as they come to mind, in any order. Then use the Move, Copy and Join commands to group the ideas into small related subgroups. The next thing you must do is promote a key idea in each subgroup to be a subheading – or add one that describes the subgroup. Group the subheadings into related groups, and in each group promote a key subgroup heading to the status of heading, or add one that describes the group. Order the final headings using MOVE. Finally, read it all through and check that the plan matches the title – sometimes bottom-up work doesn't!



Figure 3. Initial ideas processor screen



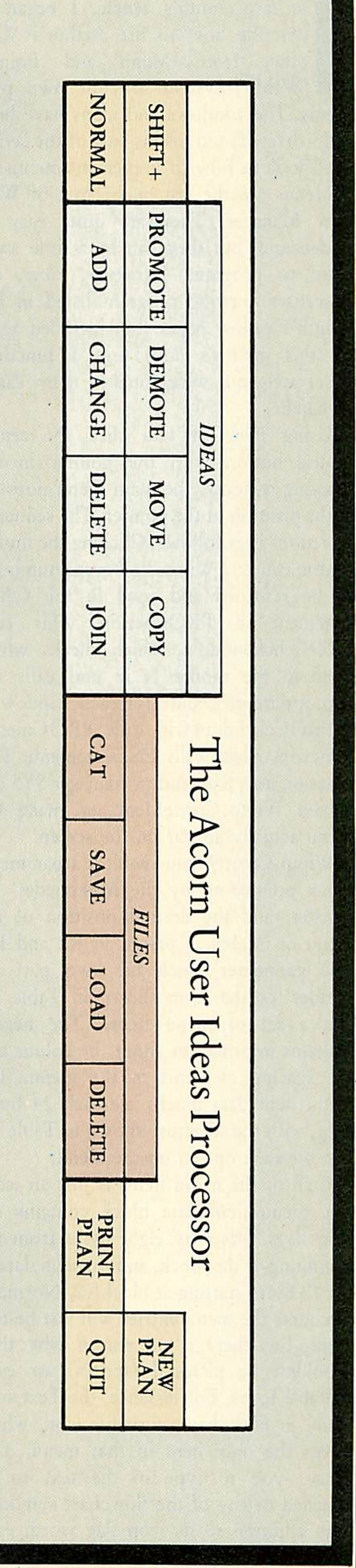
Figure 4. Ideas can be resequenced

Although the most attractive approach to using the ideas processor is undoubtedly the top-down method, it too has problems, particularly in terms of flexibility. Any plan must be flexible enough to allow alterations at a later stage, based on experience gained while using it. An ideas processor is a valuable tool, but you've got to make sure it improves delivery, rather than restricting it.

Taking it further

The main alterations you might like to think of are concerned with speed and screen display. The display speed in particular could be improved by using a different PROCshow. You can make a start by replacing PROCdh and PROCdhdw with the faster versions from Top of the List – see page 94.

One other useful tool that teachers might like to consider is the use of an Idea Post Processor (IPP). If a general plan, say for documenting a CDT project, was created, a post-processor could be used to present the structure of the plan to students for them to fill in. This way each person could develop a plan for his or her own project. I hope to cover this more fully in a future article.



The ideas processor function key strip

FLOWING ON

The conclusion of our guide to Arthurs WIMP system, with a particular focus on menus

Chris Adie

In the March issue of *Acorn User*, and in last month's article, I began to describe how to use Arthur's Window, Icon, Menu and Pointer (WIMP) system in your own programs. The windows and icons have been fully covered, and in this part of the series, we'll look at how to implement menus.

Menus are the last major part of Window Manager. They are quite easy to understand, but they can be a little awkward to program. However, *Flow*, the flowchart drawing program listed in last month's yellow pages (but included again on this month's disc) uses a function, FNcreatemenu, which makes them easier to handle.

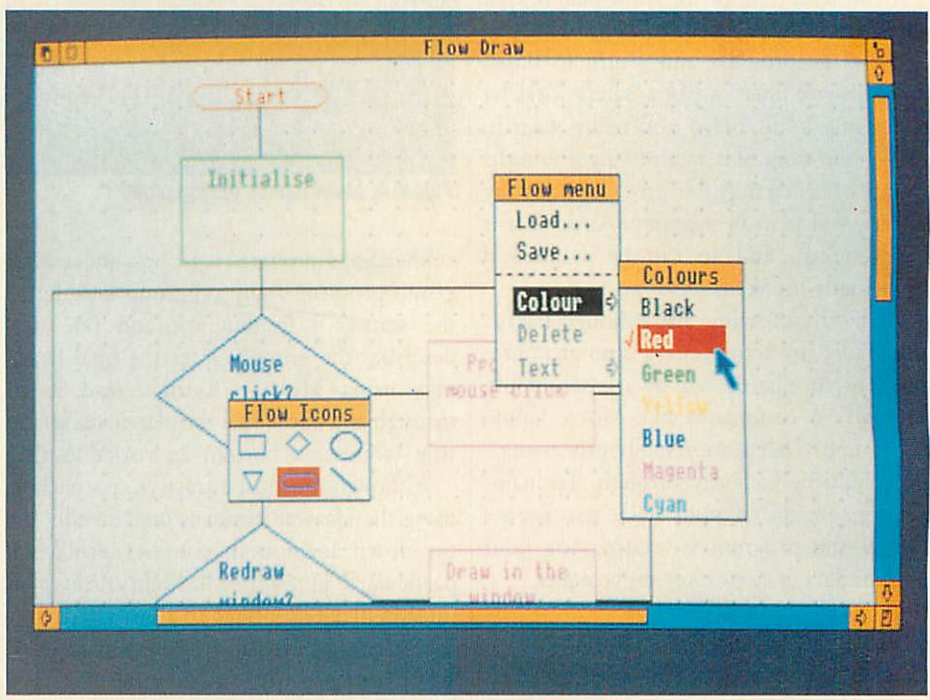
Using *Flow*, if you click the centre mouse button with the pointer in the drawing window, the main menu pops up at the position of the pointer. The sequence of actions is as follows. Clicking the mouse button causes a Wimp_Poll event number 6 to be returned and used in the CASE statement in PROCaction. This calls PROCclickwindow, which checks which window the mouse is in and calls the appropriate procedure for each window.

PROCclickdrawwin calls PROCmenudrawwin, which calls FNcreatemenu. This function uses the window manager SYS call named Wimp_CreateMenu to make the menu actually appear on the screen.

Wimp_CreateMenu requires a parameter block pointed to by the Archimedes' R1 register, and the desired position of the menu on screen is passed in R2 and R3. The parameter block has two parts: a 'header' of the form shown in Table 10, and a set of menu items. The header contains information about the colour and the spacing of items in the menu. The menu item data blocks are each 24 bytes long, with the structure shown in Table 11, one for each option on the menu.

Each of the menu items is just an icon! The menu item data block contains the icon flags, offset by eight bytes from the beginning of the block, and the icon data in the 12 bytes starting at block!12. Normally of course the menu entries will just be text icons, but there is no reason why they shouldn't be pictorial (sprites), or even writable icons. For instance, the Text submenu in *Flow* has a writable icon, which forms the only item in that menu. This allows you to type in the text to be attached to any of the flowchart symbols.

In addition to its icon flag word, each menu item has a menu flag word. Only four bits are significant in this word at present – the rest should all be zero. If bit 1 is set, there will be a tick mark to the left of the item, as in the Colour submenu in *Flow*, for instance. This tick is usually used to indicate the current setting of something. Bit 2 is set if a dotted line should follow the menu item, perhaps to separate a group of related menu items, and bit 3 is set if the item is a writable icon. Bit 7 is set only if this is the last item in the menu.



Selecting items from a menu can make programs easier to control

If the word at offset 4 in the menu item data block (known as the submenu pointer) is not equal to -1, the item is drawn with an arrow to the right of it. Moving the mouse pointer over this arrow causes the window manager either to open a window (if the submenu pointer is actually a window handle), or to create a new menu, using the new menu parameter block pointed to by the submenu pointer. There can be as many submenus in a menu hierarchy as you want (up to the total number of windows which the window manager can support).

When the window manager detects a mouse click on a menu item, it first removes all the menus from the screen, and generates any necessary redraw requests, so that the program can restore the contents of all its windows overlain by the menus to what they should be. It then sends an event type 9 – Menu Select – to the program. The block returned to the polling routine by Wimp_Poll for this event contains the item number in the top-level menu which was selected, followed by the item in the second-level menu (if any), and so on, with the list terminated by -1. So if you click on

'Magenta', the sixth item in the Colour submenu, Wimp_Poll will return the numbers 2, 5 and -1 in block!0 to block!8 – that is the sixth sub-item of the third item in the main menu structure. Notice that the system counts from zero, not one, so the third item is number two. FNmenuselectdrawwin uses the number at block!0 directly in a CASE statement, but if you had a complicated set of menus and submenus, you could make the first number select one of a set of subsidiary, nested CASE statements to reach the correct procedure for the selected option.

When creating the *Flow* menu structure, the program must set up three menu data blocks – for the main menu and two submenus – containing three headers and several menu item data blocks. The Archimedes Programmer's Reference Manual recommends that the program uses a 'shorthand' way of defining menus, and *Flow* does this. A menu is represented by a 'definition string' which contains first the menu title, then each menu item, all separated by the vertical bar symbol. This string is passed to FNcreatemenu, which interprets it, makes up the parameter blocks, and calls Wimp_CreateMenu. Various attributes for the menu items, like ticks, submenu arrows or greying out, can be included in the menu definition string.

In FNcreatemenu, the colour of the menu item can be shown by prefixing the menu text by (for example) '#5', to make it logical colour 5. So the Colours menu in *Flow* is defined by a string like this:

"Colours|>#7Black|#1Red|#B Green|#3Yellow..."

Green is logical colour 11, or &B in hexadecimal. The > 'greater than' sign tells FNcreatemenu to make the Black item appear with a tick in front of it. There are other symbols that can appear in front of the menu item in a definition string passed to FNcreatemenu, and these are all listed in Table 12. The attributes must be included in the order they are presented in the table. This means that some characters can't be included at the beginning of the text of the menu items themselves, but they can be included providing they occur after some ordinary character. So a menu item called '* command' isn't possible because the '*' would make the icon writable. But you could include the * within an item called 'OS '*' command'.

If the item is a writable icon, the corresponding section of the definition string has two parts, separated by a comma. The first must evaluate to an address where the typed-in string can be held, and the second (also passed through EVAL) must be the maximum length of this text buffer.

So, for instance, the definition string for *Flow*'s Text submenu is:

"Object text|*mtext,text_length"

Here, text is an area of memory set aside with DIM to hold the typed-in text, and text length is set to the size of that area.

If a menu item leads to a submenu, it is preceded by the name of the submenu definition string, enclosed in single quotes. Thus the Colour menu item in *Flow*'s main menu looks like:

"...|'colourmenus$'Colour|..."

FNcreatemenu will call itself recursively to define the Colour menu. The second parameter to FNcreatemenu is incremented by one for every menu level, so it knows how many times it's called itself and how many submenu levels down it is.

FNcreatemenu eventually returns a number which is the address in memory of the data block for the menu, which can then be passed to objects.

You may be wondering why there is so much emphasis in *Flow*, and in the *Desktop* program, on calling routines using constructs like:

EVAL ("FNuserdrag"+claimdrag$)

There are two reasons. The first, and most

LOCATION	CONTENTS
block!0	menu title, up to 11 chars + Return
block?12	menu title foreground colour
block?13	title background colour
block?14	menu work area foreground colour
block?15	work area background colour
block!16	width of menu items
block!20	height of menu items
block!24	vertical gap between items
block!28	address of menu item data blocks

Table 10. The 'header' part of the Create Menu parameter block

OFFSET	CONTENTS
0	menu flag word: 4 bits significant: bit 0 item ticked bit 1 item followed by dotted line bit 2 item is writeable bit 7 this is the last menu item
4	sub menu pointer (-1 if none)
8	icon flag word (see Figure 5, September)
12	icon data (as for icon data block at offset 24) eg. up to 11 text characters + Return

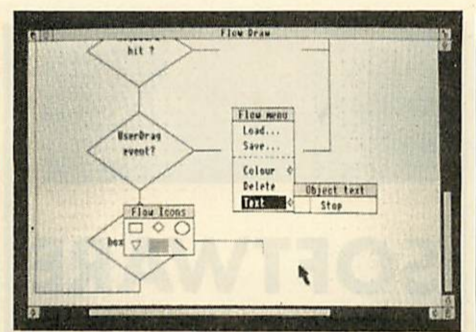
Table 11. Structure of one menu item data block

CHARACTER	MEANING
<	the menu item is disabled (greyed out) and can't be selected by the mouse. FNcreate_menu sets bit 22 in the icon flag word to achieve this
>	the item is ticked
:	the item is followed by a dotted line to separate groups of menu items
*	the item is a writable icon
#n	use logical colour n
'	the item has a sub-menu

Table 12. Symbols that may come before a menu item for FN createmenu

practical reason is because it makes extending the program to include different types of objects much easier. If you want to add a completely new type of object to the flowchart, such as a print-out symbol for example, all you need to do is provide routines called FNcreateobprintout, FNdrawobprintout, and FNtextlengthobprintout. The first of these makes entries in *Flow*'s object information table, the second actually draws the object within the Drawing window, and the last says how much text can be written in the object. If you want to be able to change the size of the object on the flowchart using the mouse to drag the object you must also provide FNdragprintout and FNuserdragprintout. Finally, you must provide an icon called 'printout', and place it in the Flowicons file so it can be drawn in the icon window. This will allow it to be selected as the current object type. None of the other routines needs changing at all.

The second reason for using EVAL to call a function is a little more theoretical. Windowing environments are naturally related to a Computer Science discipline called 'object orientated programming'. There's not enough space here to explain in detail what this means, but briefly an



Menu items can be writable

'object' comprises a data structure, plus a set of 'methods' for operating on that data in response to a 'message' sent to the object. When you execute a function like:

EVAL ("FNdrawob" + $(ob+obtype))

where $(ob+obtype) might be something like "box", you are actually sending a 'draw' message to 'ob', which invokes its 'method', FNdrawobbox, for dealing with it. The text at (ob+obtype) says what type of message you're sending, in this case 'draw a box'. BBC Basic is not really designed for object-orientated programming, and this is as far as we can go towards it. There are other languages that make it easier, and SmallTalk is the best known of these.

So now we've covered all the areas of the Arthur window manager that you need to make your programs more friendly and simpler to learn. Programs written like *Flow*, using a wholly WIMP-driven system do tend to be longer than the equivalent command-driven or keypress driven programs, but they're also a lot easier to use. Imagine a program which uses the function keys to select the shape to use, perhaps the cursor keys to position it, and other keys to select colour, text and so on. It would be relatively simple, and possible even on the BBC micro. *Flow* is longer, probably slightly harder to write, but offers so many advantages. Not the least of these is the ability to draw on a page much larger than the actual size of the screen and the ability to add new functions quite easily.

The most noticeable omission from *Flow* is a printing routine. While it would be relatively easy to add a screen dump, that isn't the same as a complete print-out of the diagram because most of it is off-screen at any time. All a screen dump would show would be the part of the diagram currently visible, plus the window borders, scroll bars and so on. *Acorn User* will be interested to see if anyone comes up with ideas or extensions for *Flow*.



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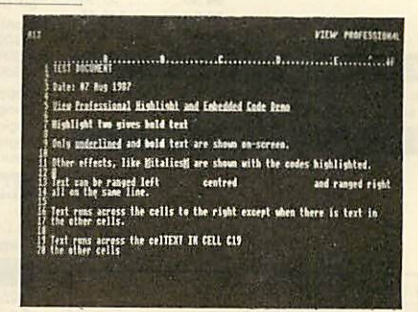
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Graham Bell







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You can run *Pipedream* on the Archimedes, on the IBM PC and on the Z88 portable, and *View Professional* runs on the BBC model B, a Master or 6502 Second Processor. They are all file-compatible – work you type on one micro can easily be transferred to another. As a prize, you can choose either the disc-based Archimedes version of *Pipedream* or the BBC version of *View Professional* which comes as two ROMs and a disc.

We've got three copies to give away to readers who can answer our three questions on software below, and give the best tiebreaker answers.

1 What was the name of the very first popular spreadsheet program designed to run on a microcomputer?
2 What was the first ROM-based wordprocessor written for the BBC micro?
3 In a normal database like *ViewStore*, which is analogous to the familiar index card – a record or a field?

As a tiebreaker, let us know, in fewer than 20 words, what is the most useful feature that you think is missing from the best wordprocessors or spreadsheets available on your micro, what would you like to be able to do that you can't?

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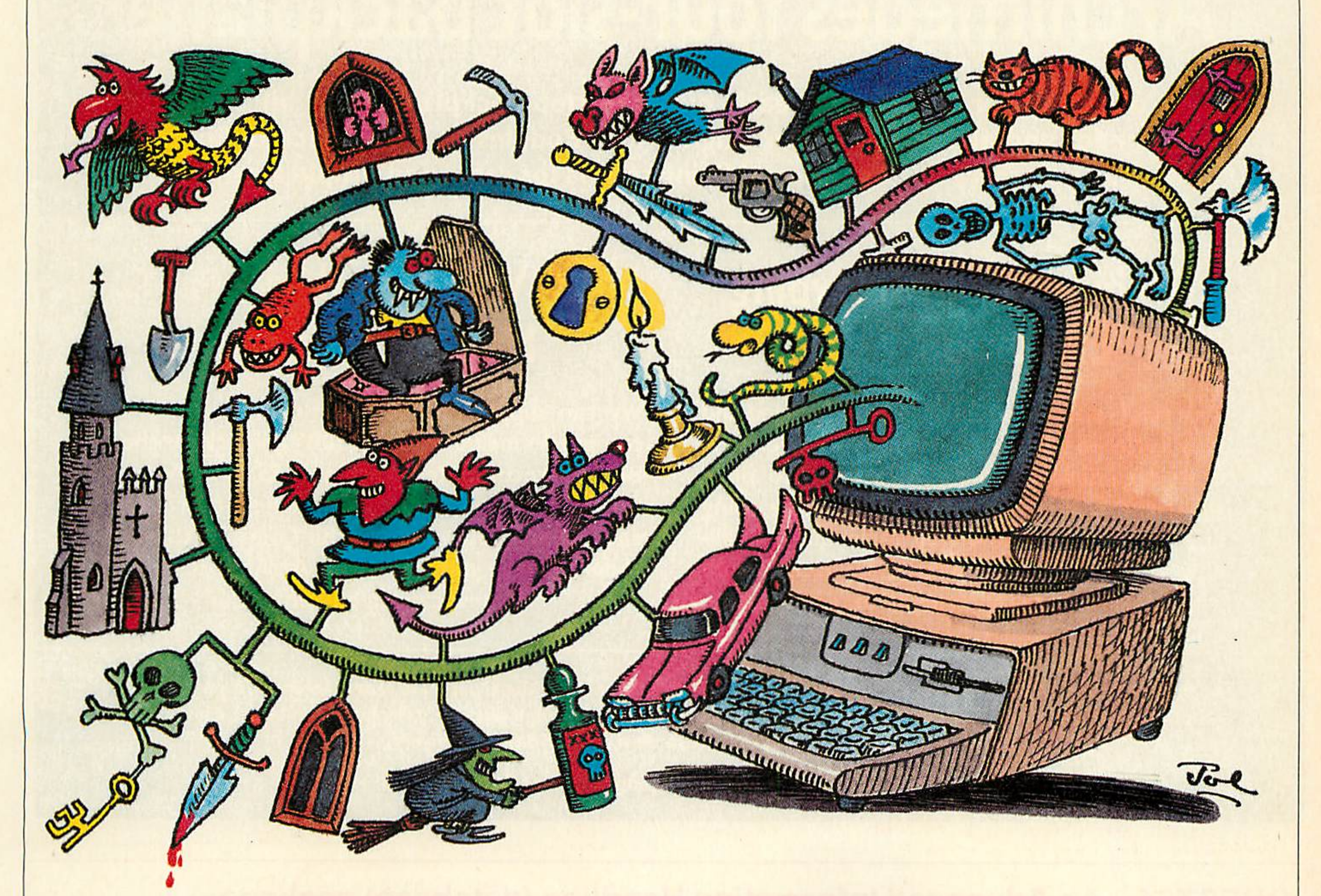
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IMAGINE THAT

In this, the last in our adventure series, we think it's your turn to create an adventure all of your own

Peter Voke

You may have enjoyed reading and playing *Warlord*, the adventure described in last month's *Acorn User*. But how would you like to have a go at creating your own adventure? It is quite hard work using Basic, and only small adventures are possible, but it can be done.

Writing an adventure is best done using an 'adventure generator'. *Warlord* was written using TAG, the Tabular Adventure Generator. This month's programs include another adventure generator: *Imagen*, the interactive multiple adventure generator. *Imagen* is different because you write the whole adventure while you are playing it. The whole thing is still in Basic, so can be typed in fairly easily, but is nevertheless quite powerful. You will notice that listing 1 on the yellow pages has none of the usual headings, sleek layout or comments of *Acorn User* programs. This is because the generator is designed to be as compact as possible, occupying only the memory between &1100 and &2000, with all the space above &2000 being reserved for storing text. Shortage of memory is a perennial concern of adventure creators, so if you have a machine with shadow memory you may like to use mode 135, 134, or 132 instead of mode 7.

If you have a Master, or any disc filing system that allows PAGE to be at &E00, line 10 of the program can be omitted, and you will have enough room to put in comments and a header, or even improvements of your own. If you have a tape unit rather than discs, there will be a problem since the program uses pages &900 and &A000 in a special way: you will have to relocate these activities to pages &E and &F and set PAGE to &1100. For people with ordinary disc filing systems and PAGE normally at &1900 (type PRINTPAGE to find out), the program loads and runs lower in memory, at&1100. This is perfectly safe on most disc filing systems, provided only loading to and saving from disc is involved.

Having got the program running, you should be presented with the following

ILLUSTRATION BY JOE WRIGHT

rather cryptic screen:

This is the . . .

Moves:

The program then prints a question mark and waits for input. This is an adventure already, though it's a very limited one: it has a single location called '...'. This is the empty adventure, which is like a blank sheet on which an adventure can be created as you play it. You will find little response to anything except 'help', which lists the commands start, quit, save, load, hint, score and so on. These are the normal words used to play an adventure, and you may like to try some of them. Usually, if an adventure is present on the disc in a file called 'Game', the word 'start' will load it in. At the moment, you probably don't have one – though there is one to load and play on the *Acorn User* monthly disc. 'Quit' gets you out of the game, 'save' puts your current position into a file called 'Pos', and 'load' loads it back in. 'Hint' gives a hint of what to do in a location, while 'score' gives your score. 'Inv' will list the items you have collected, and you should be familiar with 'get'.

Of course there are other words and phrases that crop up in the course of an adventure too. The usual 'n', 's', 'e' and 'w' are for moving about; you don't need to put the directions in full, nor prefix them with 'move' or 'go'.

If you are working from the *Acorn User* disc, you can type 'start', and play the adventure on the disc. *The Return of Felinar* illustrates what is possible with the system. It was written, using *Imagen*, in a few days. You can't edit this adventure, as it already fills all the memory, but one word of warning: don't use the 'keep!' command, which is explained below, until you understand what it does.

There is another set of special editing commands that allow the creation, modification, extension and saving of adventures. You can list these by typing 'help!'.

'Edit!' is the most important of the editing commands. It allows you to change the description of the location, the object present, and what happens there. Type 'edit!' and the following will appear:

This is the ". . (:)"

This is the

The first of these two lines tells you what is in the adventure for this location and the second is an input line, waiting for you to type in your new version of the location description. The first thing to notice is that all descriptions start with the phrase 'This is the'; if you want a different standard introduction such as 'You are', or no introduction at all, then change lines 510 and 940 of *Imagen* to suit.

The second thing to notice is the two brackets and the colon. They must be present when you type in the new description, and in the right order. They separate four parts of the location description which have different functions. The best way to understand how they work is with an illustration. Type edit!, if you have not done so, then change the description to:

This is the "wide east-west corridor/below the stairs (tapestry:A secret door leads north) get tapestry"

If you type this in correctly, you should find the game has changed. Instead of an empty location, you have the text:

This is the east-west corridor
below the stairs.
There is a tapestry here.

```
?s

This is the route down the mountain
known only to the beautiful creature on
whose back you sit. The clear air blows
your hair as you descend southwards.
Moves: s

?s

This is the halfway point of the
descent. The antelope's horns curve back
over you on either side.
Moves: s

?s

This is the foothills of the northern
mountains. Lush grass is all around.
The antelope has gone back up the
mountain.
Moves: s e w
```

The Return of Felinar* – created using *Imagen

If you now type in 'get tapestry' the text should change to:

This is the east-west corridor
below the stairs.
A secret door leads north.

If you subsequently type 'inv', you should find you have acquired a tapestry. This illustrates all that is needed to understand the *Imagen* trigger concept. In certain locations, the trigger action specified after the closing bracket (in this case 'get tapestry') sets a trigger for that location. Once the trigger has been 'set', by the player using the key words, the extra text between the colon and the closing bracket is added on to the end of the description – in this case 'a secret door leads north'. On the other hand, before the trigger is set, the object before the colon is just listed as present – "There is a tapestry here". The whole structure can be seen as: description (object:Change)trigger action.

Various fullstops can be left out, since *Imagen* puts them in automatically for you. In any part of the string, a '/' character forces a new line, and the whole string must be less than 255 characters long. You should put the whole string within quotation marks (" "), so that commas can be included as part of the string if necessary. If this isn't done, or you omit the brackets and colon, you may get the 'Bad Edit' message from which you can continue to re-edit the location. If you get other Basic errors, 'Missing' or 'Escape' for example, type GOTO 70 rather then RUN to jump back in to *Imagen*.

You may be surprised that this is enough to control an adventure. There is more to it, but the structure I have described can deal with more than tapestries. For locations with ordinary 'gettable' objects, just omit the change part of the string. Rerun *Imagen* and try:

This is the "post office(parcel:) getparcel"

The trigger has no effect here except to make the parcel appear in your inventory. For locked doors, just omit the object:

This is the "stable, The door north is locked..(:...but opens with a little persuasion) hit door with axe"

Notice the use of an ellipsis (three dots). You need two dots at the end of the description, but three at the beginning of the change phrase. They make the change phrase follow on naturally. If you want an object to be described but not gettable, simply put it in without any trigger action. Try:

This is the "top level(trapdoor just north:)"

Alternatively there could be an action other than 'get':

This is the "bedroom(bed against the wall:You find a narrow stairway descending west)move bed"

An object will only be added to the inventory if the trigger action is 'get object' and the object has not already been got. Trigger actions involving other objects will only be performed if the object is either in your inventory, or is included in the object string for this location. (For this to work, the object must be mentioned to the right of any '/' character in the object string.) Suppose you have a location description:

This is the "lair of a fearful monster..(large dragon:...which now lies dead)kill dragon with sword"

When you type in the trigger phrase, *Imagen* checks to see if the last word mentioned (in this case 'sword') is in the object part of the description. Since it is not, *Imagen* checks your inventory, and if you don't have a sword it replies "What sword?". If you have a sword, the trigger

will be set, and the dragon will be killed. Play about with edit! for a while and you will soon get the hang of it.

Now you know how the *Imagen* trigger concept works, you will want to know how to create new locations and set up moves between them. This is done using the editing commands !n, !s, !e, and !w. These are called forced moves, and create a connection from one location to another, via the ordinary moves 'n', 's', 'e' and 'w'.

Let's try to create a location with some normal moves (say east and west), plus a move that is only operational after the trigger is set (say north, as in the corridor with the tapestry). First you set up the appropriate location description using edit!, then type in '!e':

New move e to:

will appear. Type in a name for your new location. This needs to be different from all other locations in the adventure. *Imagen* checks to see if you duplicate a location, and lets you know. The name is printed after 'This is the' in the description. If you are creating a new location, for example, 'foot of the stairs', *Imagen* enquires if you are sure you want to create it by asking: 'foot of the stairs is new: create?' Pressing Y assures the generator, and your new location is created.

You can now go east by typing in 'e'. You will arrive at your new location:

This is the foot of the stairs.
Moves: w

You can edit this using edit! and move back and forth between the two locations. To create a scenario for the secret door, use '!n', and name the new location 'secret passage'. Answer Y to create the location, but press N in answer to 'Move before trigger?' since the passage is not accessible till after you get the tapestry. Answer Y for the rest of the questions, unless you want to make the secret door snap shut behind you to prevent you going back to the corridor. The trigger referred to in the last two questions, by the way, is the trigger for the location you are going to, not the current location. So the reverse move can depend on a trigger action in that location, but cannot depend on a trigger action in the current one. The same triggers and moves could be set up from the destination (the secret passage), just as they are set up from the present location (the corridor), though the two pairs of questions would then swap roles, with the move becoming the reverse move and vice versa.

In summary, there are eight potential moves from each location, 'n,' 's', 'e' 'or' 'w' both before and after the action. Initially these are all unset, producing a 'No way' message. Using the forced move editing commands it is possible to produce dead ends, secret tunnels, valves (moves that work in one direction but not the other), compulsory moves ("The soldiers march you north") and even complex mazes.

Regarding mazes, you will need to set up several locations, which should have different names initially, such as W, X, Y and Z. Create all the connections between the location, and when you are quite satisfied with the structure of the maze, use edit! to change all the descriptions so that they read the same (or similar). Since *Imagen* doesn't have a facility for dropping objects, mazes cannot be 'mapped' by a player in the standard manner. So either keep your mazes down to two or three locations, or make each location respond differently to a particular trigger action.

When setting about creating a proper adventure, it is important to make the initial location a special 'entrance lobby' to the adventure, and not an ordinary location that you will frequently need to visit. This is because *Imagen* resets all the triggers and puts all the objects back in place whenever you visit location number 1. This might seem a nuisance, but it has the virtue of allowing a player to be sent back to the beginning when you do something silly. In the adventure supplied on this month's disc, a false move will result in a 'death' location being entered, with a format like:

This is the way to break your neck, you careless fool.
There is a dead adventurer here.
Moves: n e w

The moves 'n', 'e', or 'w', of course, all take you back to the beginning.

What about the other editing commands? The odd command '??' tells you what the *Imagen* number of the present location is, and where the memory high water mark has got to. You run out when this reaches &7BFF – it is the ultimate limit on the size of the adventure.

The command 'go! 5' will move you to location number 5. Any other number can be used, of course, but be careful not to go! to a nonexistent location, as this can crash the program. To restart the adventure without reloading the game from disc, you can type go! 1.

The command 'do!' will perform the trigger action if there is one, and even prints the trigger phrase – vital when you forget your own fiendish tricks. 'Undo!' resets the trigger. This is useful when you want to check a trigger action or the screen appearance of an object description.

'Keep!' vill save your completed adventure on disc, in a file called 'Game'. You need different discs for different adventures, otherwise 'keep!' will overwrite the previous game. 'Bring!' will put a named object in the inventory, which is useful when you are testing a trigger action that uses that object and you can't be bothered to go! and get it.

Finally, a word about producing adventures for your friends and family. You can all take the editing commands out of the procedure PROCi, and even remove the procedures that deal with editing like PROCe and PROCf. This prevents other people rebuilding your adventure. Don't make adventures too difficult, or if you do have very tricky triggers, at least leave the 'hint' facility in place. The adventure on the disc is a traditional dungeons-and-dragons style romp that has a rather unusual end-game. Enjoy yourself, and then see if you can *Imagen* an adventure better than *The Return of Felinar*.

STRUCTURE OF *IMAGEN*

10-90	Main program
10	May be omitted on Master series computers.
70	Safe re-entry point if an error occurs; use GOTO 70.
100-460	PROCi: Deals with all text input including special verbs.
470-500	Subroutines for four negative replies.
510-650	PROCd: Deals with descriptions of the current location.
660-680	Subroutines for three 'There is' phrases.
690-890	PROCf: Deals with forced moves and location creation.
910-930	Functions to get replies to various questions in PROCf
940-1010	PROCe: Deals with edit! command, changes description string.
1020-1110	PROCp: Extracts various substrings from the description string.
1120-1210	PROCm: Deals with normal moves.
1220-1350	PROCa: Deals with trigger actions.
1360-1370	Subroutines for two 'Okay' replies.
	MEMORY
&900-&AFF	temporary string storage
&B00-&BFF	inventory
&C00-&CFB	trigger flags
&1100-&2000	program and variables
&2000-&7C00	adventure description strings

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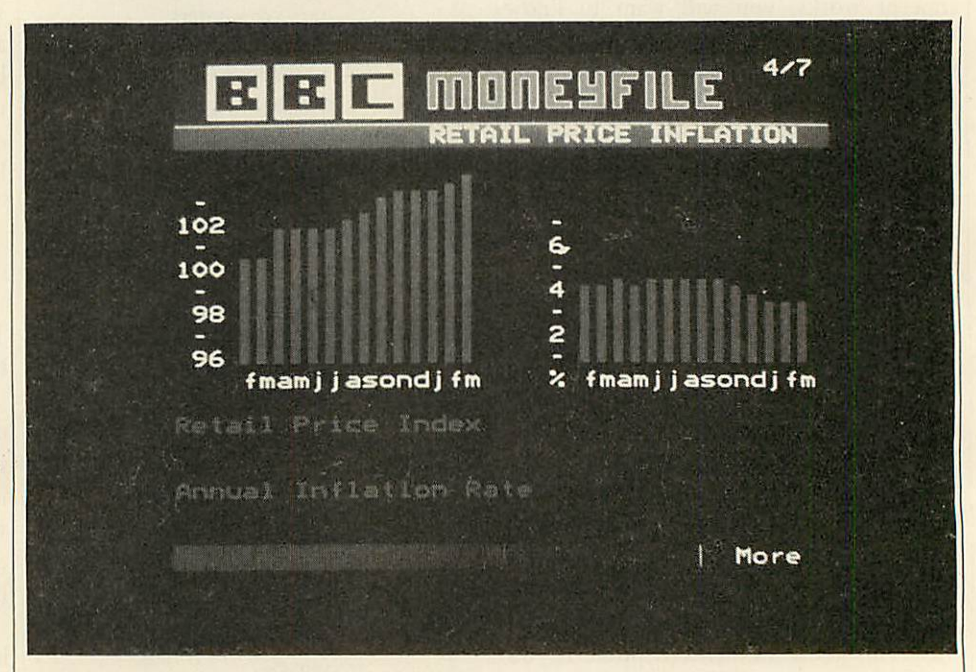
- Complete access to Ceefax, Oracle and free downloadable software.
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- If you are using teletext for a period of time the terminal has the ability to keep pages for you, updating them when new data becomes available.
- Designed for the future: the receiver offers upwards compatibility to full page teletext and picture quality teletext.

The BBC is committed to developing its telesoftware and has already made a large amount of public domain software available to its users.

You can also use the receiver's *ATS Plus* ROM commands in your own programs to extract data from the teletext pages to build a personal database of information. So you could keep track of the fortunes of your favourite football team, for example, or automatically check up on the state of your share portfolio – you could even build a system that monitored the market, and then warned you of changes.

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A CLOSER LOOK

The BBC-approved GIS Teletext Receiver is bristling with features

The BBC has joined forces with General Information Systems, creators of the Red Box home security system, to launch the BBC Advanced Teletext Receiver.

The adapter gives you access to the information on Ceefax and Oracle and lets you download free telesoftware.

A single metre-long thick lead connects to the user port on the BBC micro or Master 128. Master Compact owners with an add-on user port can also receive the benefits of teletext.

The adapter takes its power from the micro's 5v output. In addition, you are supplied with an *ATS Plus* ROM to install in one of the sideways ROM sockets or a ROM cartridge or expansion board. This is a new version of the *Advanced Teletext System* ROM released by the BBC two years ago.

Tuning is achieved by typing in *TELETEXT and then pressing Shift-f0. The screen displays a station tuning page, and gives simple instructions for tuning. First you have to press 'S' to start scanning through the channel wavelengths, and when a signal is located the scan is halted. This allows you to either save the station by pressing K, or S to continue scanning. A strong signal is indicated by the status report showing 'On-tune' and a good steady screen display. In some areas channels are transmitted on several wavelengths, and so you should scan through the entire selection before choosing one.

Individual teletext pages are called by simply pressing their unique three-figure number. The software also allows you to make use of the linked-pages system. At the bottom of the screen there are usually a series of coloured boxes followed by either page numbers or coloured keywords. These correspond to the four coloured blocks on the keystrip (f1 to f4). This linked-pages system certainly makes selecting any desired page much easier.

The 'kept page' feature is a really useful asset. If you are using teletext for long periods of time the terminal has the ability to keep pages for you, updating



them when it can. This means that when you reselect them they appear immediately, without having to wait for them to come round.

Probably the best feature of the *ATS Plus* ROM is the way the telesoftware is handled. The Ceefax service has several pages dedicated to computer software. These are updated weekly. By pressing f5 a complete list of all the telesoftware available for the week is displayed. From this catalogue programs and files can be downloaded and saved to disc with tremendous ease. There is none of the confusion that the original TFS caused when in the telesoft mode, with its black screen and Searching message.

Since its release, the *ATS* ROM has been well supported by the BBC. For instance, the BBC has broadcast a program which allows a whole week's telesoftware to be downloaded off-air automatically. Other packages include programs that can collect the major news stories and then print them out in newspaper format. These programs will all work with the *ATS Plus* ROM too. In addition BBC Schools Broadcasting has started to use the telesoftware service for sending out details of its broadcasts.

The most exciting development is the use of *ATS* ROM commands so that your own programs can extract data from teletext pages. One example of this is a program that allows your computer to look at the weather pages on Ceefax every day, take the data and plot graphs. This allows a database of weather information from all parts of the country to be built up. In the same way, checks can be made on how your favourite football team is doing. Financial information on Ceefax also allows an automatic check on the state of your share portfolio — and you could even build a system that monitored the market, then warned you of changes.

The ROM comes with a function key strip and an excellent user guide.

There is no doubt the new Advanced Teletext Receiver is an impressive performer. One reason for the BBC's adoption of the GIS adapter is that the BBC regards its Ceefax service, and especially the telesoftware service, as an important part of an integrated system.

Perhaps the most important aspect of the adapter is that it is BBC endorsed, and so everything that is broadcast will work. If you want access to Ceefax and Oracle this is a great way to receive it.

FROM ATOM TO ARC

Part one of the ups and downs of the development of Acorn

[redacted]

Carol Atack

The history of Acorn Computers is both a mirror of the history of the micro industry in Britain, and, through its continued survival, a testament to the ability and vision of its founders. But like other small computer companies which sprang to life in the boom years of the early Eighties, Acorn has known both success and failure.

To understand the way in which Acorn differed from other companies, you must delve into its origins in the late 1970s. Acorn was born from the enthusiasm of a group of students and researchers from Cambridge University's many laboratories.

Bored researchers waste plenty of time on obsessive and arcane hobbies. In the late Seventies, the hobby was building a home computer from the various kits and components that had just become available. Building your own computer required a diversity of skills from designing hardware and physically and building the device to writing an operating system and applications software to run within the tiny memory then available.

It was already obvious that Cambridge was to become a centre of whatever computer industry Britain would have. Sir Clive Sinclair's companies were busy producing calculators, and by 1977 had put together a computer kit, the MK14.

Sinclair's marketing man, Chris Curry, saw opportunities for further development of the product and discussed them with his friend, physics researcher Hermann Hauser. Hauser had helped with the MK14 and his interest in selling computers had grown as his research project had reached completion. Numerous knowledgeable computer hobbyists were on hand to provide advice and Hauser sought their help frequently.

The opportunities were too good to miss and in 1978 Hauser and Curry formed Cambridge Processor Unit. CPU worked in a room 'borrowed' from Science of Cambridge, Sinclair's company that Curry helped run, and it provided computer consultancy services to finance its hardware development.

Acorn's Formula 3 racing car with driver David Hunt



Kenneth Baker and designer Roger Wilson at the launch of the BBC micro in 1982

CPU's first major task was the development of an improved and more secure electronic fruit machine program. University brains like Steve Furber and Roger Wilson, then undergraduates, provided much of the programming and design input, and it was Wilson who invented the machine to beat Sinclair's MK14.

The System One was launched as the first product of a new company, Acorn Computers, founded in March 1979. It was a 6502-based machine with just 512 bytes of memory – it sold by mail order for £70.

On graduation from the university, Wilson went to work for the new company. He recalls that Hauser offered him the opportunity to work for a pittance but with the chance to develop the home computer of his dreams. But while the small Acorn team was busy putting computer kits together from its cramped office, other companies were advancing their plans to build more and more powerful machines for the emergent home computer market.

Up until 1980, home computers were the preserve of committed electronics buffs – the machines could only be programmed in machine code, usually via a calculator-style keyboard or row of switches. The race was on to create the first single-board, cased home computer, a machine ready to be used by people who weren't necessarily electronics buffs. Acorn's rivals in the race were Sinclair and Newbury Laboratories. The latter's planned machine, which eventually became the Newbrain, looked especially promising. The Atom, Acorn's finished product, was based around the 6502 processor and was capable of supporting the all-important Basic language.

The Atom was more successful than the company had hoped, with over 20,000 machines going out. Some were supplied in kit form; Wilson recalls how he, Hauser and Hauser's secretary walked round and round the large table in the office, assembling packs to be sent out. However, the machine's success meant that it reached a whole new market and there were problems with the self-assembly kits; one was found not to work because it had been glued together rather than soldered!

Where was Acorn to go next? Many possibilities were emerging with a new generation of 16-bit processors (like the 68000) set to come on to the market, and other developments, such as networking, gaining in importance.

Should Acorn abandon the 6502 processor which lay at the heart of all its machines? Should the next machine be full of the latest features or should it sacrifice advanced technology for the mass market?

After many lively meetings, the Acorn designers went away to work on Hauser's compromise suggestion, an improved 6502 machine with expansion possibilities. The 'Tube' was born to allow more sophisticated processors such as the 68000 to be added later. The new machine was to be called the Proton, continuing a trend born with the Atom.

Early in 1980 Chris Curry found out that the BBC was looking for a partner to produce and market a home computer. This was to be featured in an important television series aimed at increasing awareness and understanding of computers; the Computer Literacy Project. Richard Russell at the BBC had produced a detailed specification for the required machine, and the Corporation had been following the development of Newbury Laboratories' Newbrain most closely. It had virtually agreed to base the series around the machine.

While development delays on the Newbrain were worrying the BBC, Chris Curry along with other friends in the home computer industry tried to persuade them to look at alternatives to the Newbrain, or at least allow them to tender for the project. Eventually the BBC agreed, and



Acorn founders Hermann Hauser and Chris Curry

Acorn had to come up with a working prototype matching the demanding specifications in only four days.

The Acorn project which matched the BBC's requirements closest was the Proton. Although no-one at Acorn had even thought of adding things like teletext compatibility, it could already handle colour graphics and networking which were prime BBC requirements. Acorn were leaders in networking micros, having already shown the Econet system working on the Atom at a *Personal Computer World* show. In fact the potential of the Proton design was more than a match for the BBC specification – however, there was as yet no working model which Hauser and Curry could demonstrate to the BBC.

Hauser asked Roger Wilson if he could build a working Proton in four days, and received a short and definite reply – no. So he turned to Wilson's collaborator, friend and rival, Steve Furber.

In putting the same question to him, he teased Steve by saying Roger had already said it was possible. Of course, whatever Roger thought he could do, Steve had to be able to match! The ploy eventually drew a reluctant yes from both designers and they and a few others were persuaded to spend the weekend building a working model. The Proton required fast memory chips which had just been announced but had not yet been delivered; eventually a 'very nice man from Hitachi' delivered some of the first in the country – just enough for the prototype machine. The Proton circuit board was 'wirewrapped' and the operating system was ported across from the existing Atom.



The BBC Computer Literary Project in action

Inevitably, it didn't work. Heads were scratched and panic was about to set in because nothing could be seen on the screen. Just as the technical team from the BBC arrived, it began to work, displaying 80-column text on the screen. Later that day, 640 by 256 pixel graphics started to work too, but by then the BBC had already left. However, they were sufficiently impressed and the Proton, with teletext added, became the BBC micro. In April 1981 Acorn was contracted to supply the 12,000 machines that the BBC expected to sell by mail order.

In fact orders for more than twice that number were taken. The scale of the project was much greater than a small, young company like Acorn could deal with.

The company quickly had to take on more staff to deal with the volume of sales, and moved into its present offices – a former water pumping station – in Cherry Hinton. The rapid expansion – in new offices in Cambridge, and a US subsidiary – meant that Curry and Hauser had to devote too much time to keeping up with what had already happened rather than planning ways of diversifying the product range. Designers and developers were ironing out small production problems on existing products rather than dreaming up their replacements, despite a US research centre and the company's leading brains already thinking about RISC chips.

As long as the great micro boom persisted, Acorn rode high on the crest of a wave. Just as with other highly profitable and dynamic young computer companies, potential difficulties lurked unnoticed. Short-term problems, such as financing the production and delivery of unprecedented numbers of micros had to be dealt with first. Meanwhile the company basked in a glow of high-profile publicity, topped up with a unique air of establishment respectability lent by the BBC association. Racing cars raced in Acorn colours and were occasionally dented by Acorn directors, an Acorn livery plane was ordered and, at a Buckingham Palace reception, Acorn was given the Queen's Award for Technology.

The very success of the BBC micro caused difficulties. Other products were viewed in BBC micro terms. With micros piled high in WH Smith, Chris Curry wanted to lead the company further into the fast expanding mass market for cheap computers: the company came up with a cut down BBC micro, the Electron, in July 1983. Hermann Hauser's dream of an up-market office automation computer was answered in the form of the Acorn Business Computer – a reboxed BBC micro with various second processors – in September 1983. The original and fast-ageing design was the basis for new developments rather than a new idea.

Acorn was staying with the 6502 and 8-bit technology linked to its Tube interface and second processors, while Apple, IBM and the other business companies were basing designs on 16-bit chips. There was no 16-bit replacement for the BBC micro, the Electron was not around in enough numbers to take advantage of the 1983 Christmas sales. The next year was to bring the crunch with Alan Sugar just around the corner with his Amstrads, and Christmas 1984 was make or break.

Meanwhile, the backroom boys at Acorn were playing with the idea of jumping to 32-bit with their RISC designs. But time was not on Acorn's side, and, as a future Acorn boss was to admit, Acorn paid a price for not having a 16-bit micro.

To be continued next month

VOLTMACE



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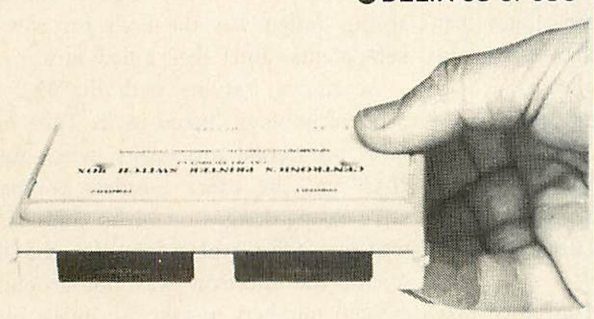
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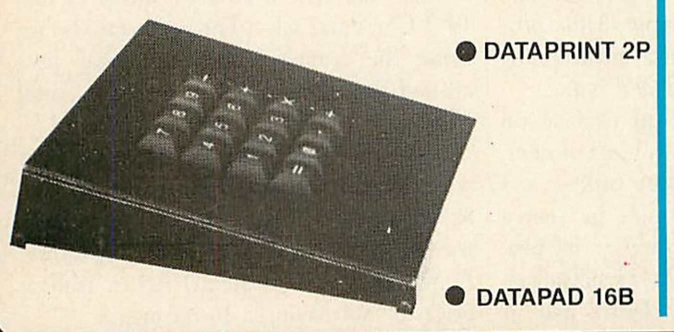
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YELLOW PAGES

COMPATIBILITY

Program	Page	BBC B	B+/128	Master 128	Master Compact	Electron	Arc	6502SP/ Turbo	ADFS	Econet	Shadow RAM	Monthly T/D
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Listing 2						■			■			■
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Listings 1		■	■	■(3)	■(3)		■(2)	■	■	■	■	■

Note
1. requires Shadow RAM, Non-Shadow RAM version on monthly disc.
2. requires 6502 emulator
3. will not work if connected to Econet

HINTS & TIPS

See Hints & Tips, page 41

Listing 1. Colour mask

```
   10 REM H&T 1 - Colour Separator
   20 REM by M Harwood
   30 REM for B/B+/E/M/C
   40 REM (c) Acorn User Oct 88
   50 :
   60 DIM P% 7, B% 4
   70 MODE 7
   80 PRINT "PICTURE FILE SEPARATOR"'
   90 INPUT "Name of picture file : " P$
  100 INPUT "Which screen mode : " M%
  110 FOR I%=0 TO M%
  120 READ H%, V%, A%
  130 NEXT
  140 :
  150 PRINT "Do you have 80k spare on th
e disc?"
  160 IF GET AND &DF = ASC "N" THEN PRIN
T "No":END
  170 :
  180 MODE M%
  190 I%=3
  200 PROCoscli("LOAD "+P$+" "+STR$~A%)
  210 PROCpalette
  220 FOR J%=0 TO 1024 STEP V%
  230 FOR K%=0 TO 1279 STEP H%
  240 IF P%?POINT(K%, J%) THEN GCOL 0, 0
 ELSE GCOL 0, 7
  250 PLOT 69, K%, J%
  260 NEXT
  270 NEXT
  280 PROCoscli("SAVE COL"+STR$~I%+" "+S
TR$~A%+" 8000")
  290 :
  300 FOR I%=0 TO 2
  310 PROCoscli("LOAD "+P$+" "+STR$~A%)
  320 PROCpalette
  330 C%=2^I%
  340 FOR J%=0 TO 1024 STEP V%
  350 FOR K%=0 TO 1279 STEP H%
  360 IF C% AND ((P%?POINT(K%, J%) EOR 7
)MOD 7) THEN GCOL 0, 7 ELSE GCOL 0, 0
  370 PLOT 69, K%, J%
  380 NEXT
  390 NEXT
  400 PROCoscli("SAVE COL"+STR$~I%+" "+S
TR$~A%+" 8000")
  410 NEXT
  420 END
  430 :
  440 DEF PROCoscli($&700)
  450 LOCAL X%,Y%
  460 X%=0:Y%=7
  470 CALL &FFF7
  480 ENDPROC
  490 :
  500 DEF PROCpalette
  510 LOCAL A%, X%, Y%, I%
  520 A%=11:X%=B% MOD 256:Y%=B% DIV 256
  530 FOR I%=0 TO 7
  540 ?B%=I%
  550 CALL &FFF1
  560 P%?I%=B%?1
  570 NEXT
  580 ENDPROC
  590 :
  600 DATA 2, 4, &3000
  610 DATA 4, 4, &3000
  620 DATA 8, 4, &3000
  630 DATA 2, 4, &4000
  640 DATA 4, 4, &5800
  650 DATA 8, 4, &5800
  660 DATA 4, 4, &6000
```

Listing 2. Keyword lister

```
10 REM H&T 2 - BBC BASIC Keywords
20 REM by Robert Gahan
30 REM for Electron only
40 REM (c) Acorn User Oct 88
50 :
60 MODE 3
70 PRINTTAB(28)"BBC Basic Keywords"
80 PRINTTAB(0,3)"A";
90 :
100 G%=0
110 FOR F%=&8071 TO &836B
120 IF ?F%<68 AND ?(F%-1)>90 NEXT
130 IF ?F%<90 PRINT CHR$?F%;:NEXT
140 G%=G%+1
150 PRINT TAB((G% DIV 21)*14,3+G% MOD
21);
160 NEXT
170 IF GET
180 END
```

Listing 3a. String demonstration

```
10 REM H&T 3a - lines
20 REM by Peter Jennings
30 REM for B/B+/E/M/C/A
40 REM (c) Acorn User Oct 88
50 :
60 MODE 7
70 VDU 23,1,0;0;0;0;
80 FOR N%=1 TO 25
90 PRINT STRING$(39,"_")
100 REM PRINT"!";STRING$(19,"_!")
110 NEXT
```

Listing 3c. Cassette inlay

```
10 REM H&T 3c - inlay
20 REM by Peter Jennings
30 REM for B/B+/E/M/C/A
40 REM (c) Acorn User Oct 88
50 :
60 MODE 3
70 VDU 2
80 VDU 1,27,1,64
90 VDU 1,27,1,15
100 PRINT STRING$(69,"_")
110 PRINT TAB(0)"!"TAB(33)"!"TAB(68)"!
"
120 FOR A=1 TO 14
130 PRINT "!";STRING$(32,"_");"!";STRI
NG$(34,"_");"!"
140 NEXT A
150 PRINT ''STRING$(69,"_")
160 FOR A=1 TO 6
170 PRINT "!";STRING$(32,"_");"!";STRI
NG$(34,"_");"!"
180 NEXT A
190 PRINT "!";STRING$(67,"_");"!"
200 VDU 3
210 END
```

Listing 3b. Title box

```
10 REM H&T 3b - Star box
20 REM by Peter Jennings
30 REM for B/B+/E/M/C/A
40 REM (c) Acorn User Oct 88
50 :
60 MODE 7
70 PRINT STRING$(40,"*")
80 FOR S=0 TO 10
90 PRINT TAB(0,S)"*"
100 PRINT TAB(39,S)"*"
110 NEXT
120 VDU 11
130 PRINT STRING$(40,"*")
140 PRINT TAB(15,5)"ACORN USER"
150 PRINT TAB(0,23)
```

Listing 3d. Barchart demonstration

```
10 REM H&T 3d - Barchart
20 REM by D Atherton
30 REM for B/B+/E/M/C/A
40 REM (c) Acorn User Oct 88
50 :
60 MODE 7
70 title$="Bar Chart using STRING$"
80 PRINT SPC7;CHR$141;title$
90 PRINT SPC7;CHR$141;title$
100 PRINT SPC7;CHR$146;STRING$(LEN(tit
le$),",")
110 PRINT STRING$(2,CHR$10)
120 FOR I%=1 TO 7
130 READ D%
140 PRINT D%;CHR$(144+I%);
150 PRINT STRING$(D%,CHR$175)
160 NEXT
170 END
180 DATA 21,9,17,12,2,24,8
```

See Archimedes Agora, page 48

Listing 1. ADFS file locator

```
10 REM Arc Agora - listing 1
20 REM *Find Source
30 REM by Dave Acton, based on a
40 REM program by Paul Dellar
50 REM for Archimedes only
60 REM (c) Acorn User October 1988
70 :
80 DIM code% &1000
90 FOR pass%=0 TO 2 STEP 2
100 P%=code%
110 oscode=0:nameptr=1:data=2:numtorea
d=3
120 which=4:bufsize=5:search=6
130 lookfor=7:dirptr=8:temp=9:fileaddr
=10
140 sp=13:link=14:pc=15
150 [OPT pass%
160 .find
170 MOV lookfor,R1
180 ADR dirptr,name+1
190 .catdir
200 STMFD (sp)!,{link}
210 MOV which,#0
220 .lookformatches
230 MOV oscode,#10
240 ADR nameptr,name
250 ADR data,buffer
260 MOV numtoread,#1
270 MOV bufsize,#&100
280 MOV search,lookfor
290 SWI "XOS_GBPB"
300 BVS exit
```

Continued ▶

◀ Arc Agora listing 1 continued

```
310 CMP numtoread,#0
320 BEQ nope
330 ADR oscode,name
340 SWI "OS_Write0"
350 SWI &100+ASC"."
360 ADR oscode,filename
370 SWI "OS_Write0"
380 SWI "OS_NewLine"
390 .nope
400 CMN which,#1
410 BNE lookformatches
420 MOV which,#0
430 .lookfordirs
440 MOV oscode,#10
450 ADR nameptr,name
460 ADR data,buffer
470 MOV numtoread,#1
480 MOV bufsize,#&100
490 ADR search,anything
500 SWI "XOS_GBPB"
510 BVS exit
520 CMP numtoread,#0
530 BEQ notadir
540 LDR temp,filetype
550 CMP temp,#2
560 BNE notadir
570 ADR fileaddr,filename
580 STMFD (sp)!,{which,lookfor,dirptr}
590 MOV temp,#ASC"."
600 STRB temp,[dirptr]
610 .appendname
620 ADD dirptr,dirptr,#1
630 LDRB temp,[fileaddr],#1
640 STRB temp,[dirptr]
650 CMP temp,#0
660 BNE appendname
670 BL catdir
680 LDMFD (sp)!,{which,lookfor,dirptr}
690 BVS exit
700 MOV temp,#0
710 STRB temp,[dirptr]
720 .notadir
730 CMN which,#1
740 BNE lookfordirs
750 .exit
760 LDMFD (sp)!,{pc}
770 :
780 .anything
790 EQUS"*"
800 EQUB 0
810 ALIGN
820 .name
830 EQUS"$"
840 EQUB 0
850 ]
860 P%+=254
870 buffer=P%
880 filetype=P%+16
890 filename=P%+20
900 P%+=256
910 NEXT pass%
920 SYS "OS_File",10,"%.Find",&FFC,,co
de%,P%
930 PRINT "*Find saved in Library."
940 END
```

Listing 2. Podule Rom source code

```
10 REM Arc Agora - listing 2
20 REM Podule Rom Source
30 REM by Dave Acton
40 REM for Archimedes only
50 REM (c) Acorn User October 1988
60 :
70 DIM code% &1000
80 uk=0
90 producttype=0
100 manufacturer=0
110 sp=13
120 link=14
130 pc=15
140 FOR pass%=4 TO 6 STEP 2
150 P%=0:O%=code%
160 [OPT pass%
170 .identbyte
180 EQUB %00000000
190 EQUB %00000001
200 EQUB %00000000
210 EQUW producttype
220 EQUW manufacturer
230 EQUB uk
240 EQUD 0
250 EQUD 0
260 :
270 FNchunkhead(chunkstart1,chunkend1,
&80)
280 FNchunkhead(chunkstart2,chunkend2,
&81)
290 FNchunkhead(chunkstart3,chunkend3,
&F5)
300 EQUD 0
310 :
320 .chunkstart1
330 B readabyte
340 B writeabyte
350 BICS pc,link,#&10000000
360 BICS pc,link,#&10000000
370 :
380 .strange
390 EQUD &3FFF000
400 :
410 .readabyte
420 CMP R1,#&1000
430 BGE outofrange
440 LDR R3,strange
450 AND R3,R3,R11
460 ADD R2,R3,R1,ASL #2
470 LDRB R0,[R2]
480 BICS pc,link,#&10000000
490 :
500 .writeabyte
510 CMP R1,#&1000
520 BGE outofrange
530 LDR R3,strange
540 AND R3,R3,R11
550 ADD R2,R3,R1,ASL #2
560 STRB R0,[R2]
570 BICS pc,link,#&10000000
580 :
590 .outofrange
600 ADR R0,badplace
610 ORRS pc,link,#1<<28
620 :
630 .badplace
640 EQUD &FC
650 EQUS "It's a bad place, Jim"
660 EQUB 0
670 ALIGN
680 .chunkend1
690 :
700 .chunkstart2
710 ]
```

Continued ▶

◀ Arc Agora listing 2 continued

```
720 P2%=P%
730 P%=0
740 [OPT pass%
750 .module
760 EQUD 0
770 EQUD 0
780 EQUD 0
790 EQUD 0
800 EQUD title
810 EQUD help
820 EQUD commands
830 :
840 .title
850 FNequz("PodRom")
860 .help
870 FNequz("Podule Demo"+CHR$(9)+"1.00
("+MID$(TIME$,5,11)+")")
880 :
890 .commands
900 FNequz("Podgy")
910 EQUD podgy
920 EQUD 0
930 EQUD podgysyntax
940 EQUD podgyhelp
950 :
960 .podgy
970 STMFD (sp)!,{link}
980 SWI "OS_WriteS"
990 FNequz("Who are you calling podgy?
")
1000 SWI "OS_NewLine"
1010 LDMFD (sp)!,{pc}
1020 :
1030 .podgysyntax
1040 FNequz("Syntax: *Podgy")
1050 .podgyhelp
1060 FNequz("*Podgy doesn't really do m
uch at all, but it is downloaded from a
podule.")
1070 ]
1080 P%+=P2%
1090 [OPT pass%
1100 .chunkend2
1110 :
1120 .chunkstart3
1130 EQUS "Acorn User Podule"
1140 EQUB 0
1150 ALIGN
1160 .chunkend3
1170 ]
1180 NEXT pass%
1190 SYS "OS_File",10,"AUpod",&FFA,,cod
e%,0%
1200 PRINT"Rom saved as 'AUpod'."
1210 END
1220 :
1230 DEF FNequz(s$)
1240 [OPT pass%
1250 EQUS s$
1260 EQUB 0
1270 ALIGN
1280 ]:=0
1290 :
1300 DEF FNchunkhead(chunkstart%,chunke
nd%,type%)
1310 [OPT pass%
1320 EQUD type%+((chunkend%-chunkstart%
)<<8)
1330 EQUD chunkstart%
1340 ]
1350 =0
```

Listing 3. Podule Rom blower

```
10 REM Arc Agora - listing 3
20 REM Podule Rom Blower
30 REM by Dave Acton
40 REM for Archimedes only
50 REM (c) Acorn User October 1988
60 :
70 DIM code% &1000
80 P%=code%
90 [OPT 2
100 .poke
110 SWI "OS_EnterOS"
120 STRB R1,[R0]
130 MOV R1,PC
140 TEQP R1,#3
150 MOV R1,R1
160 MOVS PC,R14
170 ]
180 INPUT"File: "file$
190 INPUT"Socket: "sock%
200 a%=&3240000+&4000*sock%
210 in%=OPENIN(file$)
220 WHILE NOT EOF#in%
230 PROCpoke(a%,BGET#in%)
240 a%+=4
250 ENDWHILE
260 CLOSE#in%
270 END
280 :
290 DEF PROCpoke(A%,B%)
300 CALL poke
310 ENDPROC
```

Listing 4. Palette switching

```
10 REM Arc Agora - listing 4
20 REM Spiral
30 REM by Jeroen Boomgaardt
40 REM for Archimedes
50 REM (c) Acorn User October 1988
60 :
70 MODE 12
80 OFF
90 FOR c%=1 TO 15
100 COLOUR c%,c%<<4,c%<<4,c%<<4
110 NEXT
120 segs=60.5
130 w%=4
140 r=0
150 t=0
160 rinc=w%/segs
170 tinc=2*PI/segs
180 ORIGIN 640,512
190 x1%=0
200 y1%=0
210 x2%=w%
220 y2%=0
230 MOVE x1%,y1%
240 :
250 FOR s%=1 TO segs*60
260 GCOL 0,s% MOD 15+1
270 r+=rinc
280 t+=tinc
```

Continued ▶

◀ Arc Agora listing 4 continued

```
290 c=COS(t)
300 s=SIN(t)
310 newx1%=r*c
320 newy1%=r*s
330 newx2%=(r+w%)*c
340 newy2%=(r+w%)*s
350 MOVE x2%,y2%
360 PLOT 85,newx2%,newy2%
370 MOVE x1%,y1%
380 PLOT 85,newx1%,newy1%
390 x1%=newx1%
400 y1%=newy1%
410 x2%=newx2%
420 y2%=newy2%
430 NEXT
440 :
450 d%=0
460 REPEAT
470 WAIT
480 FOR c%=1 TO 15
490 A%=((c%+d%)MOD 15+1)<<4
500 COLOUR c%,A%,A%,A%
510 NEXT
520 d%=(d%+14) MOD 15
530 UNTIL FALSE
```

Listing 5. Big clock

```
10 REM Arc Agora - listing 5
20 REM A Very Expensive Digital Watch
30 REM by David Lawrence
40 REM for Archimedes only
50 REM (c) Acorn User October 1988
60 :
70 ot$=""
80 MODE 12:MODE 9
90 ORIGIN 640,512
100 OFF
110 COLOUR 1,0,0,&60
120 COLOUR 2,0,0,&C0
130 COLOUR 11,&A0,&A0,0
140 COLOUR 12,&30,&30,&30
150 COLOUR 13,&80,0,0
160 COLOUR 14,&A0,0,0
170 COLOUR 15,&C0,&C0,&C0
180 COLOUR 129
190 b=1
200 REPEAT
210 WAIT
220 SYS 6,112,b
230 SYS 6,113,3-b
240 b=3-b
250 GCOL 1:CIRCLE FILL 0,0,500
260 GCOL 2:CIRCLE 0,0,500
270 FOR A%=0 TO 330 STEP 30
280 PROChand(A%,460,-420,8,11)
290 NEXT
300 REPEAT
310 t$=TIME$
320 UNTIL t$<>ot$
330 ot$=t$
340 hh=(VALMID$(t$,17,2) MOD 12)*30
350 mm=(VALMID$(t$,20,2))*6
360 ss=(VALMID$(t$,23,2))*6
370 mm=mm+ss/60:hh=hh+mm/12
380 PRINTTAB(16,8);MID$(t$,17)
390 PROChand(hh,300,64,32,13)
400 PROChand(mm,400,32,16,14)
410 PROChand(ss,450,64,6,15)
420 GCOL 12:CIRCLE FILL 0,0,8
430 GCOL 0:CIRCLE 0,0,8
440 UNTIL FALSE
450 :
460 DEF PROChand(a,l%,b%,w%,c%)
470 GCOL c%
480 c=COSRAD(a):s=SINRAD(a)
490 POINT -s*b%-c*w%,-c*b%+s*w%
500 POINT -s*b%+c*w%,-c*b%-s*w%
510 PLOT 85,s*l%-c*w%,c*l%+s*w%
520 PLOT 85,s*l%+c*w%,c*l%-s*w%
530 GCOL 0
540 DRAW s*l%-c*w%,c*l%+s*w%
550 DRAW -s*b%-c*w%,-c*b%+s*w%
560 DRAW -s*b%+c*w%,-c*b%-s*w%
570 DRAW s*l%+c*w%,c*l%-s*w%
580 ENDPROC
```

See Taking shape, page 54

Listing 1. The Game

```
10 REM 3D Pentominoes
20 REM by David Lawrence
30 REM from an idea by Don Scales
40 REM for BBC B/B+/M/C/E/A
50 REM (c) Acorn User October 1988
60 :
70 MODE 1
80 PROCscreen
90 PROCinit
100 PROCplay
110 IF more THEN RUN
120 MODE 7
130 *FX 229,0
140 END
150 :
160 DEF PROCplay
170 REPEAT
180 COLOUR 3
190 PRINT TAB(1,20);"Pos: (";xp;",";yp;
",";zp;")"
200 IF old<>new PROCbox(old,0):PROCbox
(new,3)
210 *FX 15
220 K$=GET$:old=new
230 IF error PRINT TAB(1,22);SPC11:err
or=FALSE
240 IF K$="," new=(new+11)MOD 12
250 IF K$="." new=(new+1)MOD 12
260 IF K$=" " PROCredraw
270 IF INSTR(rot$,K$) PROCrot(K$)
280 IF K$=CHR$136 PROCmove(xm-1,0,0)
290 IF K$=CHR$137 PROCmove(1,0,0)
300 IF K$=CHR$139 PROCmove(0,ym-1,0)
310 IF K$=CHR$138 PROCmove(0,1,0)
320 IF K$="_" PROCmove(0,0,zm-1)
330 IF K$="\" PROCmove(0,0,1)
340 IF K$=CHR$13 PROCplace
350 IF K$=CHR$127 PROCdelete
360 UNTIL used=12 OR K$="Q"
370 IF used=12 GCOL 0,1:VDU 5:MOVE 48,
335:PRINT "Well done!":VDU4
380 PRINT TAB(1,23);"Another go?"
390 *FX 15
400 more=((GET AND &DF)=ASC"Y")
410 ENDPROC
```

Continued ▶

◀ **Taking Shape listing 1 continued**

```
420 :
430 DEF PROCplace
440 IF num=-1 PROCer("No shape"):ENDPR
OC
450 err=FNfit
460 IF err=1 PROCer("Outside box")
470 IF err=2 PROCer("Overlaps")
480 IF err=0 PROCputit
490 ENDPROC
500 :
510 DEF FNfit
520 F%=TRUE
530 FOR b%=1 TO 5
540 PROCextract(C%(num,b%))
550 IF xp+x<0 OR xp+x>=xm F%=FALSE
560 IF yp+y<0 OR yp+y>=ym F%=FALSE
570 IF zp+z<0 OR zp+z>=zm F%=FALSE
580 NEXT
590 IF NOT F% THEN =1
600 F%=TRUE
610 FOR b%=1 TO 5
620 PROCextract(C%(num,b%))
630 IF G%(xp+x,yp+y,zp+z) F%=FALSE
640 NEXT
650 IF NOT F% THEN =2
660 =0
670 :
680 DEF PROCputit
690 VDU 28,1,16,11,6,12,26
700 PROCshape(num,1)
710 FOR b%=1 TO 5
720 PROCextract(C%(num,b%))
730 G%(xp+x,yp+y,zp+z)=num+1
740 NEXT
750 PROCshowall
760 C%(num,0)=1
770 num=-1:used=used+1
780 ENDPROC
790 :
800 DEF PROCer(t$)
810 COLOUR 1:PRINT TAB(1,22);t$
820 SOUND 1,-10,201,1:error=TRUE
830 ENDPROC
840 :
850 DEF PROCdelete
860 IF C%(new,0)=0 PROCer("Not used"):
ENDPROC
870 FOR xx=0 TO xm-1
880 FOR yy=0 TO ym-1
890 FOR zz=0 TO zm-1
900 IF G%(xx,yy,zz)=new+1 G%(xx,yy,zz)
=0
910 NEXT
920 NEXT
930 NEXT
940 PROCshape(new,2)
950 PROCshowall
960 C%(new,0)=0:used=used-1
970 ENDPROC
980 :
990 DEF PROCshowall
1000 VDU 28,15,23,38,6,12,26
1010 PROCbase(xm,ym,zm)
1020 FOR zq=0 TO zm-1
1030 FOR yq=0 TO ym-1
1040 FOR xq=0 TO xm-1
1050 IF G%(xq,yq,zq) PROCcube(xq,yq,zq)
1060 NEXT
1070 NEXT
1080 NEXT
1090 PROCoutline(xm,ym,zm,3)
1100 PROCcurs(xp,yp,zp)
1110 ENDPROC
1120 :
1130 DEF PROCmove(xa,ya,za)
1140 PROCcurs(xp,yp,zp)
1150 xp=(xp+xa)MOD xm
1160 yp=(yp+ya)MOD ym
1170 zp=(zp+za)MOD zm
1180 PROCcurs(xp,yp,zp)
1190 ENDPROC
1200 :
1210 DEF PROCcurs(xc,yc,zc)
1220 PROC3d(4,xc+1,yc+1,zc)
1230 GCOL 3,1:PRINT out$;
1240 ENDPROC
1250 :
1260 DEF PROCbox(pos,col)
1270 GCOL 0,col
1280 MOVE 63+pos*6*16,63
1290 PLOT 1,84,0:PLOT 1,0,84
1300 PLOT 1,-84,0:PLOT 1,0,-84
1310 ENDPROC
1320 :
1330 DEF PROCredraw
1340 IF C%(new,0)=1 PROCer("Shape Used"
):ENDPROC
1350 VDU 28,1,15,11,6,12,26
1360 num=new
1370 PROCdraw(num,-5,6,1)
1380 ENDPROC
1390 :
1400 DEF PROCrot(dir$)
1410 IF num=-1 PROCer("No Shape"):ENDPR
OC
1420 VDU 28,1,16,11,6,12,26
1430 dir$=CHR$(ASC(dir$)AND&DF)
1440 IF INKEY-1 dir$=dir$+"a"
1450 FOR b%=1 TO 5
1460 PROCextract(C%(num,b%))
1470 C%(num,b%)=EVAL("FNrot"+dir$)
1480 NEXT
1490 PROCdraw(num,-5,6,1)
1500 ENDPROC
1510 :
1520 DEF FNrotX=(2+y)*100+(2-z)*10+2+x
1530 DEF FNrotY=(2-x)*100+(2+y)*10+2+z
1540 DEF FNrotZ=(2+z)*100+(2+x)*10+2-y
1550 DEF FNrotXa=(2-y)*100+(2+z)*10+2+x
1560 DEF FNrotYa=(2+x)*100+(2+y)*10+2-z
1570 DEF FNrotZa=(2+z)*100+(2-x)*10+2+y
1580 :
1590 DEF PROCbase(xo,yo,zo)
1600 GCOL 0,3
1610 PROC3d(4,xo,0,0)
1620 PROC3d(21,0,0,0)
1630 PROC3d(21,0,yo,0)
1640 PROC3d(4,0,0,0)
1650 PROC3d(21,0,0,zo)
1660 ENDPROC
1670 :
1680 DEF PROCoutline(xo,yo,zo,col)
1690 GCOL 0,col
1700 RESTORE 3200
1710 FOR z%=1 TO 11
1720 READ p%,xa,ya,za
1730 PROC3d(p%,xo*xa,yo*ya,zo*za)
1740 NEXT
1750 ENDPROC
1760 :
1770 DEF PROCdraw(n,xx,yy,zz)
1780 FOR I%=1 TO 5
1790 A%(I%)=C%(n,I%)
1800 NEXT
1810 FOR I%=1 TO 5:L%=I%
1820 FOR J%=I% TO 5
1830 IF A%(J%)<A%(L%) L%=J%
1840 NEXT
```

Continued ▶

◀ **Taking Shape listing 1 continued**

```
1850 B%=A%(L%):A%(L%)=A%(I%):A%(I%)=B%
1860 PROCextract(B%)
1870 PROCcube(x+xx,y+yy,z+zz)
1880 NEXT
1890 ENDPROC
1900 :
1910 DEF PROCcube(xc,yc,zc)
1920 PROC3d(4,xc,yc,zc)
1930 PRINT cube$;
1940 GCOL 0,0
1950 IF ABSx+ABSy+ABSz<>0 PRINT out$;
1960 ENDPROC
1970 :
1980 DEF PROC3d(o%,x,y,z)
1990 PLOT o%,736+(x-y)*xs,640-(x+y)*ys+
z*zs
2000 ENDPROC
2010 :
2020 DEF PROCscreen
2030 VDU 23;8202;0;0;0;
2040 PROCdrop(12,3,27,1)
2050 PRINT TAB(13,2);"3D Pentominoes"
2060 PROCdrop(1,16,11,6)
2070 PROCdrop(15,23,38,6)
2080 PROCdrop(1,23,11,19)
2090 PROCdrop(1,30,38,26)
2100 ENDPROC
2110 :
2120 DEF PROCinit
2130 DIM C%(11,5),A%(5)
2140 xs=48:ys=24:zs=48:used=0:num=0
2150 xp=0:yp=0:zp=0:new=0:old=1
2160 rot$="XYZxyz":error=FALSE
2170 GCOL 0,2:*FX 4,1
2180 *FX 229,1
2190 FOR I%=0 TO 11
2200 FOR J%=1 TO 5
2210 READ V%
2220 C%(I%,J%)=V%*10+2
2230 PROCdot(I%*6+V%MOD 10,(V%/10)MOD 1
0)
2240 NEXT
2250 NEXT
2260 VDU 28,15,23,38,6
2270 PRINT'"    Select grid size:"
2280 PRINT'" 1)  5 x 4 x 3"'" 2)  6 x 5
x 2"'" 3) 10 x 3 x 2"
2290 PRINT''" - Which ? ";
2300 REPEAT
2310 k$=GET$
2320 UNTIL k$>"0" AND k$<"4"
2330 IF k$="1" xm=5:ym=4:zm=3
2340 IF k$="2" xm=6:ym=5:zm=2
2350 IF k$="3" xm=10:ym=3:zm=2
2360 DIM G%(xm,ym,zm)
2370 VDU 12,26
2380 cube$=FNstring
2390 out$=FNstring
2400 PROCbase(xm,ym,zm)
2410 PROCoutline(xm,ym,zm,3)
2420 PROCdraw(0,-5,6,1)
2430 PROCcurs(0,0,0)
2440 ENDPROC
2450 :
2460 DEF FNstring
2470 st$=""
2480 REPEAT
2490 READ v%,v1%,v2%
2500 IF v%=18 THEN PROCgcol
2510 IF v%=0 OR v%=1 OR v%=81 PROCplot
2520 UNTIL v%=-1
2530 =st$
2540 :
2550 DEF PROCgcol
2560 st$=st$+CHR$18+CHR$v1%+CHR$v2%
2570 ENDPROC
2580 :
2590 DEF PROCplot
2600 st$=st$+CHR$25+CHR$v%+FNc(v1%)+FNc
(v2%)
2610 ENDPROC
2620 :
2630 DEF FNc(q%)
2640 q%=q%+65536
2650 =CHR$(q% MOD 256)+CHR$(q% DIV 256)
2660 :
2670 DEF PROCshape(n,c)
2680 GCOL 0,c
2690 RESTORE
2700 IF n<>0 FOR i=1 TO n*5:READ q:NEXT
2710 FOR i=1 TO 5
2720 READ V%
2730 PROCdot(n*6+V%MOD10,(V%/10)MOD10)
2740 NEXT
2750 ENDPROC
2760 :
2770 DEF PROCdot(xd,yd)
2780 MOVE 64+xd*16,64+yd*16:PLOT 1,15,0
2790 PLOT 81,-15,15:PLOT 81,15,0
2800 ENDPROC
2810 :
2820 DEF PROCextract(zyx)
2830 x=zyx MOD 10-2
2840 y=(zyx/10) MOD 10-2
2850 z=(zyx/100) MOD 10-2
2860 ENDPROC
2870 :
2880 DEF PROCdrop(l,d,r,u)
2890 l=l*32:d=991-d*32:r=(r+1)*32
2900 u=1023-u*32
2910 VDU18,0,131,24,l;d-12;r+12;u;16
2920 VDU18,0,128,24,l+4;d-8;r+8;u-4;16
2930 VDU18,0,131,24,l-8;d-4;r+4;u+8;16
2940 VDU18,0,128,24,l-4;d;r;u+4;16,26
2950 ENDPROC
2960 :
2970 DATA 02,12,22,32,42
2980 DATA 11,12,22,32,42
2990 DATA 21,12,22,32,42
3000 DATA 11,21,22,32,42
3010 DATA 11,21,22,12,32
3020 DATA 20,21,22,12,32
3030 DATA 21,12,22,23,33
3040 DATA 21,31,22,23,33
3050 DATA 11,21,22,23,33
3060 DATA 20,21,22,32,42
3070 DATA 21,12,22,32,23
3080 DATA 11,21,22,32,33
3090 :
3100 DATA 18,0,1, 0,-xs,-ys, 0,xs,-ys
3110 DATA 81,-xs,ys*3, 81,xs,-ys
3120 DATA 18,0,3, 81,0,ys*2, 81,xs,-ys
3130 DATA 18,0,2, 0,-xs,-ys, 81,xs,-ys
3140 DATA 81,-xs,-ys, -1,0,0
3150 DATA 1,xs,ys, 1,0,2*ys, 1,-xs,ys
3160 DATA 1,-xs,-ys, 1,0,-2*ys
3170 DATA 1,xs,-ys, 1,0,2*ys, 1,xs,ys
3180 DATA 0,-xs,-ys, 1,-xs,ys, -1,0,0
3190 :
3200 DATA 4,1,1,0, 5,1,0,0
3210 DATA 5,1,0,1, 5,0,0,1
3220 DATA 5,0,1,1, 5,0,1,0
3230 DATA 5,1,1,0, 5,1,1,1
3240 DATA 5,1,0,1, 4,1,1,1
3250 DATA 5,0,1,1
```

JOE'S JOTTINGS

◄ See Joe's Jottings, page 58

Listing 1. Thought organiser

```
   10 REM Ideas Processor
   20 REM by Joe Telford
   30 REM for BBC B+/M/C/A (B & shadow)
   40 REM (c) Acorn User October 1988
   50 :
   60 max=50
   70 MODE 128
   80 VDU 19,0,4,0;0;0;
   90 PROCcoff
  100 PROCsetup
  110 PROCfirstscreen
  120 PROCmess("")
  130 ON ERROR PROCerr
  140 *FX 4 1
  150 PROCshow
  160 REPEAT:PROCcoff
  170 REPEAT:A%=FNmove
  180 IF A%=ASC("A") PROCadd
  190 IF A%=ASC("E") PROCchange
  200 IF A%=127 OR A%=ASC"d" PROCdeletel
ine:PROCshow
  210 IF A%=ASC("J") PROCjoin:PROCshow
  220 IF A%=ASC("C") PROCcat
  230 IF A%=ASC("S") PROCsavef:PROCfilen
ame(f$)
  240 IF A%=ASC("L") PROCloadf:PROCfilen
ame(f$)
  250 IF A%=ASC("D") PROCdelete
  260 IF A%=ASC("P") PROCprintout
  270 IF A%=140 PROCpromote:PROCshow
  280 IF A%=141 PROCdemote:PROCshow
  290 IF A%=142 PROCmove:PROCshow
  300 IF A%=143 OR A%=135 PROCcopy:PROCs
how
  310 IF A%=149 PROCnewsheet
  320 UNTIL A%=ASC("Q")
  330 UNTIL FNquit
  340 *FX 4 0
  350 MODE 128:*BASIC
  360 DEF FNquit
  370 PROCmess("Do you really want to en
d? Y/N ")
  380 REPEAT A$=CHR$(GET AND 223):UNTIL
A$="Y" OR A$="N"
  390 IF A$="Y" THEN =TRUE
  400 =FALSE
  410 :
  420 DEF PROCfilename(f$)
  430 VDU 26
  440 PRINTTAB(63,29);:PROCdh("File: "+S
TRING$(10," "))
  450 PRINTTAB(69,29);:PROCdh(f$)
  460 PROCmess("")
  470 ENDPROC
  480 :
  490 DEF PROCdemote
  500 T%(tp%)=T%(tp%)+1
  510 IF T%(tp%)>3 T%(tp%)=3:VDU 7:PROCm
ess("No more subgroups - Press SPACE"):R
EPEAT UNTIL GET$=" ":PROCmess("")
  520 ENDPROC
  530 :
  540 DEF PROCpromote
  550 T%(tp%)=T%(tp%)-1
  560 IF T%(tp%)=-1 T%(tp%)=0:VDU 7:PROC
mess("This is the highest level of title
 - Press SPACE"):REPEAT UNTIL GET$=" ":P
ROCmess("")
  570 ENDPROC
  580 :
  590 DEF PROCmess(t$)
  600 VDU 26,28,1,2,78,1
  610 COLOUR 128:COLOUR 1:CLS
  620 PRINT t$;
  630 VDU 26
  640 ENDPROC
  650 :
  660 DEF PROCmessplus(t$)
  670 VDU 26,28,1,2,78,1
  680 COLOUR 128:COLOUR 1:CLS
  690 PRINT t$;
  700 ENDPROC
  710 :
  720 DEF PROCexmessplus
  730 VDU 26
  740 ENDPROC
  750 :
  760 DEF PROCfirstscreen
  770 PROCtr(0,0,79,3)
  780 PROCtr(0,28,79,3)
  790 PRINTTAB(22,1);:PROCdhdw("The Joe'
s Jottings")
  800 PRINTTAB(25,29);:PROCdhdw("Ideas P
rocessor")
  810 PRINTTAB(20,15);:PROCdhdw("Press S
PACE to begin")
  820 REPEAT UNTIL GET=32
  830 PRINTTAB(20,15);STRING$(40," ");
  840 PRINTTAB(20,16);STRING$(40," ");
  850 PRINTTAB(2,29);:PROCdh("The Joe's
Jottings")
  860 ENDPROC
  870 :
  880 DEF PROCtr(x,y,l,d)
  890 PROCrect(x*16+8,1008-(y+d)*32,l*16
,d*32,0)
  900 ENDPROC
  910 :
  920 DEF PROCerr
  930 VDU 3:*FX 3 0
  940 CLOSE#0
  950 VDU 7
  960 IF ERR=17 PROCmess("Last action ca
ncelled!..Please continue."):A$=INKEY$(3
00):PROCmess(""):ENDPROC
  970 IF ERR=190 PROCmess("Can't save:ca
t full - change disc!"):A$=INKEY$(300):P
ROCmess(""):ENDPROC
  980 IF ERR=179 PROCmess("Can't save:di
r full - change disc!"):A$=INKEY$(300):P
ROCmess(""):ENDPROC
  990 IF ERR=198 PROCmess("Can't save:di
sc full - change disc!"):A$=INKEY$(300):
PROCmess(""):ENDPROC
 1000 PROCmessplus("")
 1010 PRINTTAB(0,0);:REPORT:PRINT;ERR;"
at line "ERL;:
 1020 A$=INKEY$(500)
 1030 PROCexmessplus
 1040 PROCshow
 1050 ENDPROC
 1060 :
 1070 DEF PROCnewsheet
 1080 PROCmess("Do you really want a new
 plan? Y/N")
 1090 REPEAT A$=CHR$(GET AND 223):UNTIL
A$="Y" OR A$="N"
 1100 IF A$="N" PROCmess(""):ENDPROC
 1110 RUN
 1120 :
 1130 DEF PROCcat
 1140 COLOUR 0:COLOUR 129
 1150 VDU 26,28,0,27,79,4
 1160 CLS:PRINT:*.
 1170 PROCmess(" Files available:"+CHR$1
3+CHR$10+STRING$(56," ")+"Press space to
 return")
 1180 REPEAT UNTIL GET=32
 1190 PROCmess("")
```

Continued ►

JOE'S JOTTINGS

◀ **Joe's Jottings listing 1 continued**

```
1200 VDU 26,28,0,27,79,4
1210 CLS
1220 VDU 26
1230 PROCshow
1240 ENDPROC
1250 :
1260 DEF PROCdelete
1270 REPEAT
1280 PROCmessplus("delete file:- ")
1290 f$=FNgpi(7,0,cap$+low$+nos$)
1300 PROCexmessplus
1310 IF f$="" PROCcat
1320 UNTIL f$>""
1330 ch%=OPENUP(f$):CLOSE #ch%:IF ch%=0
VDU7:PROCmess("Can't find that file."):
A$=INKEY$(500):PROCmess(""):ENDPROC
1340 OSCLI("REMOVE "+f$)
1350 PROCmess("Deleted!"):A$=INKEY$(300
):PROCmess("")
1360 ENDPROC
1370 :
1380 DEF PROCsavef
1390 PROCmess(STRING$(7," ")+"Save as I
dea Processor file...type I"+CHR$13+CHR$
10+"or      Save as Word Processor file..
.type W")
1400 REPEAT A$=CHR$(GET AND 223):UNTIL
A$="I" OR A$="W"
1410 IF A$="W" PROCsavew:ENDPROC
1420 REPEAT
1430 PROCmessplus("Save as Idea Process
or file, name: ")
1440 f$=FNgpi(7,0,cap$+low$+nos$)
1450 PROCexmessplus
1460 IF f$="" PROCcat
1470 UNTIL f$>""
1480 ch%=OPENUP(f$):IF ch%<>0 CLOSE#ch%
:VDU 7:PROCmess("That file exists"):A$=I
NKEY$(500):PROCmess(""):ENDPROC
1490 ch%=OPENOUT(f$)
1500 PROCmess("Saving... please wait")
1510 PRINT#ch%,eot%
1520 LOCAL loop%
1530 FOR loop%=0 TO eot%
1540 PRINT#ch%,T$(loop%),T%(loop%)
1550 NEXT
1560 CLOSE#ch%
1570 PROCmess("")
1580 ENDPROC
1590 :
1600 DEF PROCsavew
1610 REPEAT
1620 PROCmessplus("Save as Word Process
or text file, name: ")
1630 f$=FNgpi(7,0,cap$+low$+nos$)
1640 PROCexmessplus
1650 IF f$="" PROCcat
1660 UNTIL f$>""
1670 ch%=OPENUP(f$):IF ch%<>0 CLOSE#ch%
:VDU 7:PROCmess("That file exists"):A$=I
NKEY$(500):PROCmess(""):ENDPROC
1680 PROCmessplus("Saving... please wai
t")
1690 LOCAL loop%
1700 OSCLI("SPOOL "+f$)
1710 FOR loop%=0 TO eot%
1720 PRINTSTRING$(T%(loop%)*5," ");T$(l
oop%)
1730 NEXT:*SPOOL
1740 CLS:PROCexmessplus
1750 ENDPROC
1760 :
1770 DEF PROCprintout
1780 LOCAL loop%,h$
1790 PROCmess("Printout: (A)ll, (H)eadi
ngs, (C)urrent heading")
1800 REPEAT:A$=CHR$(GET AND 223): UNTIL
INSTR("AHC",A$)>0
1810 IF A$="C" PROCprintthisheading:END
PROC
1820 IF A$="A" h$=" all ideas." ELSE h$
=" headings."
1830 PROCmess("Printing"+h$+CHR$13+CHR$
10+"Setup printer then press SPACE.")
1840 REPEAT UNTIL GET=32
1850 *FX 3 10
1860 PRINT"The Joe's Jottings Ideas Pro
cessor. ";
1870 PRINT"Printout of";h$
1880 PRINT STRING$(79,"-")
1890 FOR loop%=0 TO eot%
1900 IF A$="A" PRINT H$(T%(loop%));STRI
NG$(T%(loop%)*5," ");T$(loop%)
1910 IF A$="H" AND T%(loop%)<2 PRINT H$
(T%(loop%));STRING$(T%(loop%)*5," ");T$(
loop%)
1920 NEXT
1930 PRINTSTRING$(79,"-")
1940 VDU 12
1950 *FX 3 0
1960 PROCmess("")
1970 ENDPROC
1980 :
1990 DEF PROCprintthisheading
2000 LOCAL h$,loop%
2010 h$=" ideas under one heading."
2020 PROCmess("Printing"+h$+CHR$13+CHR$
10+"Setup printer then press SPACE.")
2030 REPEAT UNTIL GET=32
2040 *FX3,10
2050 PRINT"The Joe's Jottings Ideas Pro
cessor. ";
2060 PRINT"Printout of";h$
2070 PRINT STRING$(79,"-")
2080 loop%=FNfindbefore(tp%)
2090 PRINT H$(T%(loop%));STRING$(T%(loo
p%)*5," ");T$(loop%)
2100 REPEAT:loop%=loop%+1
2110 IF T%(loop%)>1 PRINTH$(T%(loop%));
STRING$(T%(loop%)*5," ");T$(loop%)
2120 UNTIL T%(loop%)<2
2130 PRINT STRING$(79,"-")
2140 VDU 12
2150 *FX 3 0
2160 PROCmess("")
2170 ENDPROC
2180 :
2190 DEF FNfindbefore(t)
2200 IF T%(t)<=2 THEN =t
2210 LOCAL aloop%,flag%
2220 flag%=0
2230 FOR aloop%=t TO 0
2240 IF T%(aloop%)<2 THEN flag%=aloop%
2250 NEXT
2260 =flag%
2270 :
2280 DEF PROCloadf
2290 REPEAT
2300 PROCmessplus("load Ideas Processor
file, name:- ")
2310 f$=FNgpi(7,0,cap$+low$+nos$)
2320 PROCexmessplus
2330 IF f$="" PROCcat
2340 UNTIL f$>""
2350 ch%=OPENUP(f$):IF ch%=0 CLOSE#ch%:
VDU 7:PROCmess("Can't find that file."):
A$=INKEY$(500):PROCmess(""):ENDPROC
2360 PROCmess("Loading... please wait")
2370 PROCclearT
2380 PROCshow
```

Continued ▶

◄ **Joe's Jottings listing 1 continued**

```
2390 INPUT#ch%,eot%
2400 LOCAL loop%
2410 FOR loop%=0 TO eot%
2420 INPUT#ch%,T$(loop%),T%(loop%)
2430 NEXT
2440 CLOSE#ch%
2450 PROCmess("")
2460 PROCshow
2470 ENDPROC
2480 :
2490 DEF FNgpi(len,effect,valid$)
2500 PROCcon
2510 LOCAL a$,b:a$=""
2520 PRINT STRING$(len,".");STRING$(len
,CHR$(8));:*FX20 1
2530 b=GET:IF b=13 PROCcoff:=a$
2540 IF b=127 AND a$="" THEN 2530
2550 IF b=127 a$=LEFT$(a$,LEN(a$)-1):PR
INTCHR$b;".";CHR$(8);:GOTO 2530
2560 IF effect=0 THEN 2590
2570 IF effect=1 b=b AND 223 ELSE b=b O
R 32
2580 IF effect=3 AND(RIGHT$(a$,1)=" " O
R a$="") b=b AND 223
2590 IF LEN(a$)=len OR INSTR(valid$,CHR
$b)=0 VDU 7:GOTO 2530
2600 PRINTCHR$b;:a$=a$+CHR$b:GOTO 2530
2610 :
2620 DEF PROCvalid
2630 cap$=" ABCDEFGHIJKLMNOPQRSTUVWXYZ"
2640 low$=" abcdefghijklmnopqrstuvwxyz"
2650 nos$="-.0123456789"
2660 pun$=" _^[]}{!#$%&'()=?/*:+;.,<>"+
CHR$34
2670 all$=cap$+low$+nos$+pun$
2680 ENDPROC
2690 :
2700 DEF PROCrect(x,y,l,w,f)
2710 MOVE x,y:DRAW x+l,y
2720 IF f=0 DRAW x+l,y+w ELSE PLOT 85,x
,y+w
2730 IF f=0 DRAW x,y+w ELSE PLOT 85,x+l
,y+w
2740 MOVE x,y+w:IF f=0 DRAW x,y ELSE MO
VE x,y
2750 ENDPROC
2760 :
2770 DEF PROCdh(t$)
2780 LOCAL loop%
2790 FOR loop%=1 TO LEN (t$)
2800 PROCextend("H",ASC(MID$(t$,loop%,1
)))
2810 NEXT
2820 ENDPROC
2830 :
2840 DEF PROCextend(d$,c%)
2850 X%=&70:Y%=0:?X%=c%:A%=10:CALL &FFF
1
2860 IF d$="H" VDU23,128,X%?1,X%?1,X%?2
,X%?2,X%?3,X%?3,X%?4,X%?4,128,8,10,23,12
8,X%?5,X%?5,X%?6,X%?6,X%?7,X%?7,X%?8,X%?
8,128,11:ENDPROC
2870 LOCAL c%,p%,h%,n%,t%
2880 FOR c%=1 TO 5 STEP 4
2890 FOR p%=4 TO 0 STEP -4:VDU 23,128
2900 FOR h%=c% TO c%+3:t%=0
2910 FOR n%=p% TO p%+3:IF (2^n% AND X%?
h%) t%=t%+3*(4^(n%-p%))
2920 NEXT:VDU t%,t%:NEXT:VDU 128:NEXT:V
DU 8,8,10:NEXT:VDU 11,11,9,9
2930 ENDPROC
2940 :
2950 DEF PROCdhdw(t$)
2960 LOCAL loop%
2970 FOR loop%=1 TO LEN (t$)
2980 PROCextend("HW",ASC(MID$(t$,loop%,
1)))
2990 NEXT
3000 ENDPROC
3010 :
3020 DEF PROCsetup
3030 *KEY 0 A
3040 *KEY 1 E
3050 *KEY 2 d
3060 *KEY 3 J
3070 *KEY 4 C
3080 *KEY 5 S
3090 *KEY 6 L
3100 *KEY 7 D
3110 *KEY 8 P
3120 *KEY 9 Q
3130 *FX 226 140
3140 *FX 227 150
3150 PROCvalid
3160 DIMT$(max),T%(max),H$(3)
3170 DIMO$(max),O%(max)
3180 H$(0)="Ttl :":H$(1)="Hdg :":H$(2)=
"Sub :":H$(3)="Pnt :"
3190 PROCclearT
3200 ENDPROC
3210 :
3220 DEF FNmove
3230 LOCAL A%
3240 A%=GET:B%=(INKEY-1)+2*(INKEY-2)
3250 IF A%=138 AND B%=0 PROCup:PROCshow
3260 IF A%=139 AND B%=0 PROCdown:PROCsh
ow
3270 IF A%=138 AND B%=-1 PROChup:PROCsh
ow
3280 IF A%=139 AND B%=-1 PROChdown:PROC
show
3290 IF A%=138 AND B%<-1 tp%=eot%:PROCs
how
3300 IF A%=139 AND B%<-1 tp%=0:PROCshow
3310 =A%
3320 :
3330 DEF PROCup
3340 tp%=tp%+1
3350 IF tp%>eot% tp%=0
3360 ENDPROC
3370 :
3380 DEF PROChdown
3390 REPEAT:tp%=tp%-1
3400 IF tp%<0 UNTIL TRUE:ELSE UNTIL T%(
tp%)<=1
3410 IF tp%<0 tp%=0
3420 ENDPROC
3430 :
3440 DEF PROChup
3450 REPEAT:tp%=tp%+1
3460 IF tp%>eot% UNTIL TRUE ELSE UNTIL
T%(tp%)<=1
3470 IF tp%>eot% tp%=eot%
3480 ENDPROC
3490 :
3500 DEF PROCdown
3510 tp%=tp%-1
3520 IF tp%<0 tp%=eot%
3530 ENDPROC
3540 :
3550 DEF PROCshow
3560 S%=(tp% DIV 21):COLOUR 128:COLOUR1
3570 FOR R%=0 TO 20
3580 IF (R%+S%*21)=max THEN PRINT "-end
-"+STRING$(74,"-");: ELSEIF(R%+S%*21)>eo
t% PRINTSTRING$(80,"-");:ELSEPRINTTAB(0,
R%+4);H$(T%(R%+(S%*21)));SPC(T%(R%+(S%*2
1))*5);T$(R%+(S%*21));STRING$(75-(T%(R%+
(S%*21))*5+LENT$(R%+(S%*21))),"  ");
```

Continued ►

JOE'S JOTTINGS

◀ **Joe's Jottings listing 1 continued**

```
3590 NEXT
3600 COLOUR 129:COLOUR 0
3610 PRINTTAB(0,4+(tp% MOD 21));H$(T%(t
p%));SPC(T%(tp%)*5);T$(tp%);STRING$(75-(
(T%(tp%)*5)+LENT$(tp%))," ")
3620 COLOUR 1:COLOUR 128
3630 ENDPROC
3640 :
3650 DEF PROCadd
3660 PROCmess("Inserting...")
3670 IF FNinceot = FALSE VDU 7: PROCmes
s("Memory full- before adding any more i
deas,"+CHR$13+CHR$10+" some will need co
mbining or deleting!"+STRING$(27," ")+":
Press SPACE"):REPEAT UNTIL GET=32:PROCme
ss(""):ENDPROC
3680 PROCshow
3690 PROCmess("Please add text now...")
3700 COLOUR 129:COLOUR 0
3710 PRINTTAB(0,(tp% MOD 21)+4),"ADD> "
;
3720 T$(tp%)=FNgpi(60,0,all$)
3730 PROCshow
3740 PROCmess("")
3750 ENDPROC
3760 :
3770 DEF PROCchange
3780 buff$=T$(tp%)
3790 T$(tp%)="":T%(tp%)=0
3800 PROCshow
3810 PROCmess(buff$+CHR$13+CHR$10+"Plea
se retype this line now...")
3820 COLOUR 129:COLOUR 0
3830 PRINTTAB(0,4+(tp% MOD 21)),"CHA> "
;
3840 T$(tp%)=FNgpi(60,0,all$)
3850 PROCshow
3860 PROCmess("")
3870 ENDPROC
3880 :
3890 DEF FNinceot
3900 LOCAL loop%
3910 IF eot%=max THEN =FALSE
3920 FOR loop%=eot% TO tp% STEP -1
3930 T$(loop%+1)=T$(loop%)
3940 T%(loop%+1)=T%(loop%)
3950 NEXT
3960 T$(tp%)=""
3970 T%(tp%)=0
3980 eot%=eot%+1
3990 =TRUE
4000 :
4010 DEF PROCdeleteline
4020 PROCmess("Press Y to delete, N to
cancel")
4030 REPEAT A$=CHR$(GET AND 223) :UNTIL
A$="Y" OR A$="N"
4040 IF A$="N" PROCmess(""):ENDPROC
4050 PROCdodel
4060 ENDPROC
4070 :
4080 DEF PROCdodel
4090 PROCmess("Deleteing...")
4100 IF tp%=eot% T$(tp%)="":T%(tp%)=0:P
ROCmess(""):ENDPROC
4110 PROCdeltxt
4120 PROCmess("")
4130 ENDPROC
4140 :
4150 DEF PROCdeltxt
4160 LOCAL loop%
4170 FOR loop%=tp% TO eot%-1
4180 T$(loop%)=T$(loop%+1)
4190 T%(loop%)=T%(loop%+1)
4200 NEXT
4210 T$(eot%)=""
4220 T%(eot%)=0
4230 eot%=eot%-1
4240 ENDPROC
4250 :
4260 DEF PROCcoff:VDU 23;8202;0;0;0;:EN
DPROC
4270 DEF PROCcon:VDU 23;29194;0;0;0;:EN
DPROC
4280 :
4290 DEF PROCjoin
4300 PROCmess("Move the bar to the firs
t of the lines you want joining"+CHR$13+
CHR$10+STRING$(60," ")+"then press RETUR
N")
4310 REPEAT A%=FNmove:UNTIL A%=13
4320 jl%=tp%
4330 IF jl%=eot% PROCmess(""):ENDPROC
4340 IF LEN(T$(jl%)+T$(jl%+1))>64 VDU 7
:PROCmess(" second line will not fit!...
Press J to Join anyway"+CHR$13+CHR$10+ST
RING$(24," ")+"or...Press Q to quit"):RE
PEAT A$=CHR$(GET AND 223):UNTIL A$="Q" O
R A$="J":PROCmess(""):IF A$="Q" ENDPROC
4350 PROCmess("Joining... Please wait")
4360 T$(jl%)=LEFT$(T$(jl%)+":"+T$(jl%+1
),65)
4370 tp%=tp%+1
4380 PROCdodel
4390 tp%=tp%-1
4400 ENDPROC
4410 :
4420 DEF PROCgetlines(t$,t1$,t2$)
4430 PROCmess("Move the bar to the line
you are "+t$+":"+CHR$13+CHR$10+STRING$(
60," ")+"then press RETURN")
4440 REPEAT A%=FNmove:UNTIL A%=13
4450 sy%=tp%:ey%=-1
4460 IF T%(tp%)=0 OR T%(tp%)=3 OR tp%=e
ot% ey%=tp%
4470 IF ey%=-1 ey%=tp%:REPEAT:ey%=ey%+1
:UNTIL T%(ey%)<=T%(tp%) OR ey%=eot%:IF e
y%<eot% OR (ey%=eot% AND T%(ey%)<=T%(tp%
)) ey%=ey%-1
4480 PROCmess("Move the bar to the line
that you want to "+t1$+" just before:"+
CHR$13+CHR$10+STRING$(60," ")+"then pres
s RETURN")
4490 REPEAT A%=FNmove:UNTIL A%=13
4500 ty%=tp%
4510 IF ty%<=ey% AND ty%>sy% VDU 7:PROC
mess("Can't "+t1$+" into the area being
"+t2$+"!"+CHR$13+CHR$10+STRING$(65," ")+
":Press SPACE"):REPEAT UNTIL GET=32:ENDP
ROC
4520 PROCmess("Please wait... Clearing
space")
4530 PROCclear0
4540 ENDPROC
4550 :
4560 DEF PROCcopy
4570 LOCAL sy%,ey%,ty%
4580 PROCgetlines("copying","copy","cop
ied")
4590 PROCmess("Now sorting ideas... Ple
ase wait.")
4600 IF (eot%+ey%-sy%+1)>max VDU 7:PROC
mess(" Not enough room to copy these ide
as."+CHR$13+CHR$10+" You might delete or
join some ideas to make room!"+STRING$(
10," ")+":Press SPACE"):REPEAT UNTIL GET
=32 :PROCshow:ENDPROC
4610 PROCcopyorder
```

Continued ▶

◀ Joe's Jottings listing 1 continued

```
 4620 PROCmess("Resorting ideas... Pleas
e wait")
 4630 PROCcopyback(blk)
 4640 PROCmess("")
 4650 tp%=ty%:PROCshow
 4660 ENDPROC
 4670 :
 4680 DEF PROCcopyorder
 4690 blk=FNtto(0,ty%-1,0)
 4700 blk=FNtto(sy%,ey%,blk)
 4710 blk=FNtto(ty%,eot%,blk)
 4720 ENDPROC
 4730 :
 4740 DEF PROCmove
 4750 LOCAL sy%,ey%,ty%
 4760 PROCgetlines("moving","move","move
d")
 4770 PROCmess("Now sorting ideas... Ple
ase wait.")
 4780 IF ty%=sy% PROCmess(""):PROCshow:E
NDPROC
 4790 IF ty%>sy% PROCsbt
 4800 IF ty%<sy% PROCtbs
 4810 PROCmess("Resorting ideas... Pleas
e wait")
 4820 PROCcopyback(blk)
 4830 PROCmess("")
 4840 tp%=ty%:PROCshow
 4850 ENDPROC
 4860 :
 4870 DEF PROCsbt
 4880 blk=FNtto(0,sy%-1,0)
 4890 blk=FNtto(ey%+1,ty%-1,blk)
 4900 blk=FNtto(sy%,ey%,blk)
 4910 blk=FNtto(ty%,eot%,blk)
 4920 ENDPROC
 4930 :
 4940 DEF PROCtbs
 4950 blk=FNtto(0,ty%-1,0)
 4960 blk=FNtto(sy%,ey%,blk)
 4970 blk=FNtto(ty%,sy%-1,blk)
 4980 blk=FNtto(ey%+1,eot%,blk)
 4990 ENDPROC
 5000 :
 5010 DEF FNtto(s,f,c):LOCAL loop%
 5020 FOR loop%=s TO f:O$(loop%+c-s)=T$(
loop%):O%(loop%+c-s)=T%(loop%):NEXT
 5030 =f-s+c+1
 5040 :
 5050 DEF PROCcopyback(b):LOCALloop%
 5060 FOR loop%=0 TO b-1:T$(loop%)=O$(lo
op%):T%(loop%)=O%(loop%):NEXT
 5070 eot%=b-1
 5080 ENDPROC
 5090 :
 5100 DEF PROCclearT
 5110 LOCAL loop%
 5120 FOR loop%=0 TO max:T$(loop%)="":T%
(loop%)=0:NEXT
 5130 tp%=0:eot%=0
 5140 ENDPROC
 5150 :
 5160 DEF PROCclearO
 5170 LOCAL loop%
 5180 FOR loop%=0 TO max:O$(loop%)="":O%
(loop%)=0:NEXT
 5190 ENDPROC
```

See Imagine That, page 71

Listing 1. Adventure creator

```
   10 IFPAGE<>&1100:PAGE=&1100:CHAIN"IMA
GEN"
   20 MODE7:VDU15:HIMEM=&2000
   30 FORJ%=0TO7:J%?&2004=17:NEXT
   40 $&200C="..(:)"+STRING$(10,CHR$13)
   50 !&2000=&201A:L%=1
   60 W%=&900:X%=&A00
   70 A%=&2004:IFL%>1FORI%=2TOL%:A%=A%+L
EN$A%+1:NEXTELSEFORI%=&C00TO&D00:?I%=0:N
EXT:T%=&BFF:$T%=""
   80 B%=A%:A%=A%+8
   90 PROCd:PROCi:GOTO70
  100 DEFPROCi
  110 PRINT'CHR$134;:INPUT$X%
  120 IF$X%=""THEN110
  130 IFASC$X%=33:PROCf:ENDPROC
  140 IF$X%="??":PRINTL%,~!&2000:ENDPROC
  150 IFASC$X%=32:$X%=RIGHT$($X%,LEN$X%-
1):GOTO150
  160 IFASCRIGHT$($X%,1)=32:$X%=LEFT$($X
%,LEN$X%-1):GOTO160
  170 IFASC$X%<96PRINT'"NO capitals.":GO
TO110
  180 IFLEN$X%=1PROCm:ENDPROC
  190 IF$X%=$A%ANDL%?&C00>0THENPRINT'"Do
ne.":ENDPROC
  200 IF$X%=$A%ANDLEFT$($X%,4)="get ":T%
=T%-LEN$X%+3:$T%=RIGHT$($X%,LEN$X%-4)
  210 IF$X%=$A%THENPROCa:ENDPROC
  220 IFLEFT$($X%,4)="get ":PRINT'"You c
an't.":ENDPROC
  230 IF$X%="help"PRINT'"start quit save
 load hint score inv get n e s w...":END
PROC
  240 IF$X%="quit"END
  241 IF$X%="score"PRINT?&CFF:ENDPROC
  250 IF$X%<>"hint"THEN290
  260 VDU?A%:I%=A%+1:IF?A%=13THENENDPROC
  270 REPEATIF?I%=32VDU32,I%?1:I%=I%+1EL
SEVDU46
  280 I%=I%+1:UNTIL?I%=13:PRINT:ENDPROC
  290 IF$X%="help!"PRINT'"!n !s !e !w ??
 do! undo! go! edit! keep!":ENDPROC
  300 IF$X%="do!"ANDLEFT$($A%,4)<>"get "
THENL%?&C00=-1:PRINT$A%:ENDPROC
  310 IFLEFT$($X%,7)="bring! "T%=T%-LEN$
X%+6:$T%=RIGHT$($X%,LEN$X%-7):ENDPROC
  320 IF$X%="undo!"ANDLEFT$($A%,4)<>"get
 "THENL%?&C00=0:ENDPROC
  330 IF$X%="edit!"PROCe:ENDPROC
  340 IFLEFT$($X%,3)="go!":L%=EVALRIGHT$
($X%,LEN$X%-3):ENDPROC
  350 U%=FALSE
  360 IF$X%="start"L%=1:U%=TRUE:*LOAD ga
me
  370 IF$X%="keep!"U%=TRUE:*SAVE game 20
00 7C00
```

Continued ▶

◀ **Imagine That, listing 1 continued**

```
380 IF$X%="save"U%=TRUE:!&AF8=L%:!&AFC
=T%:*SAVE pos AF8 D00
390 IF$X%<>"load"THEN420
400 U%=TRUE:*LOAD pos AF8
410 L%=!&AF8:T%=!&AFC
420 IFU%ENDPROC
430 IF$X%<>"inv"PRINT:ONRND(4)GOSUB460
,470,480,490:ENDPROC
440 PRINT'"You are carrying:";:IFT%<&B
FF:I%=T%:Y%=20:REPEAT:PRINTTAB(Y%)CHR$13
1$I%;:Y%=(Y%+10-10*(LEN$I%>9))MOD40:I%=I
%+LEN$I%+1:UNTILI%>=&BFE:PRINT:ENDPROC
450 PRINT" nothing.":ENDPROC
460 PRINT"No go.":RETURN
470 PRINT"No use.":RETURN
480 PRINT"Nothing happens.":RETURN
490 PRINT"Do what?":RETURN
500 DEFPROCd
510 PRINT'"This is the ";
520 PROCp("(",-1):PRINT"."
530 Q%=L%?&C00
540 N%=(Q%=0)ANDASC$A%<>58
550 IFN%ONRND(3)GOSUB650,660,670:PRINT
" a ";
560 PROCp(":",N%):$W%=$X%
570 IFN%:PRINT" here."
580 PROCp(")",Q%):IFQ%AND$X%<>""PRINT"
."
590 G%=Q%/63+B%:PRINT"Moves: ";
600 IF?G%<>L%+16PRINT"n ";
610 IFG%?3<>L%+16PRINT"s ";
620 IFG%?1<>L%+16PRINT"e ";
630 IFG%?2<>L%+16PRINT"w ";
640 PRINT:ENDPROC
650 PRINT"There is";:RETURN
660 PRINT"You see";:RETURN
670 PRINT"You find";:RETURN
680 DEFPROCf:IFLEN$X%>2:ENDPROC
690 $X%=RIGHT$($X%,1)
700 IF$X%<>"n"AND$X%<>"e"AND$X%<>"w"AN
D$X%<>"s":ENDPROC
710 PRINT'"New move "$X%;:INPUT" to "$
W%
720 C%=&200C:I%=1:IFLEFT$($C%,LEN$W%)=
$W%THEN740
730 REPEAT:C%=C%+LEN$C%+9:I%=I%+1:UNTI
LLEFT$($C%,LEN$W%)=$W%ANDASCMID$($C%,LEN
$W%+1,1)<64OR$C%=""
740 PRINT$W%" ";:IF$C%<>"":PRINT"found
":GOTO800
750 PRINT"is new: create y/n":IFGETMOD
32<>25:ENDPROC
760 IFC%+LEN$W%+10>&7BFF:PRINT"NO ROOM
":ENDPROC
770 $C%=$W%+"(:)"+STRING$(10,CHR$13)
780 !&2000=C%+LEN$C%+10
790 FORJ%=-8TO-1:C%?J%=I%+16:NEXT
800 IF$X%="n"G%=0
810 IF$X%="e"G%=1
820 IF$X%="w"G%=2
830 IF$X%="s"G%=3
840 IFFNb=25THENB%?G%=I%+16
850 IFFNa=25THENB%?(G%+4)=I%+16
860 PRINT"reverse ";:IFFNb=25THENC%?(-
5-G%)=L%+16
870 PRINT"reverse ";:IFFNa=25THENC%?(-
1-G%)=L%+16
880 ENDPROC
890 DEFFNb
900 PRINT"move before trigger y/n":=GE
TMOD32
910 DEFFNa
920 PRINT"move after trigger y/n":=GET
MOD32
930 DEFPROCe
940 PRINT"This is the """$(B%+8)""""'"
This is the ";
950 INPUT""$W%:IFINSTR($W%,"(")=0PRINT
"BAD EDIT":GOTO940
960 E%=B%+LEN$B%+1:F%=B%+LEN$W%+9
970 IF!&2000+F%-E%>&7BFFTHENPRINT"NO R
OOM":ENDPROC
980 IFE%>F%:FORJ%=0TO!&2000-E%:F%?J%=E
%?J%:NEXTELSEFORJ%=!&2000-E%TO0STEP-1:F%
?J%=E%?J%:NEXT
990 $(B%+8)=$W%:!&2000=!&2000+F%-E%
1000 ENDPROC
1010 DEFPROCp(I$,R%):$X%=""
1020 P%=INSTR($A%,I$)
1030 IFP%=0OR$A%=""ENDPROC
1040 S%=INSTR($A%,"/")
1050 IFS%=0ORS%>P%THEN1080
1060 IFR%THENPRINTLEFT$($A%,S%-1)
1070 A%=A%+S%:GOTO1020
1080 $X%=LEFT$($A%,P%-1)
1090 IFR%THENPRINT$X%;
1100 A%=A%+P%:ENDPROC
1110 DEFPROCm
1120 K%=L%+16
1130 IFQ%THENF%=B%+4ELSEF%=B%
1140 IF$X%="n":K%=?F%
1150 IF$X%="e":K%=F%?1
1160 IF$X%="w":K%=F%?2
1170 IF$X%="s":K%=F%?3
1180 K%=K%-16
1190 IFK%=L% PRINT'"No way."ELSEL%=K%
1200 ENDPROC
1210 DEFPROCa
1220 IFINSTR($X%," ")=0THEN1320
1230 J%=0:REPEATJ%=J%+1:UNTILMID$($X%,L
EN$X%-J%,1)=" "
1240 $X%=RIGHT$($X%,J%)
1250 IFINSTR($W%,$X%)>0THEN1320
1260 J%=T%:REPEAT
1270 IF$X%=$J%THEN1310
1280 J%=J%+LEN$J%+1
1290 UNTILJ%>&C00
1300 PRINT'"What "$X%"?":ENDPROC
1310 UNTILTRUE:L%?&C00=-1
1320 L%?&C00=-1
1330 PRINT:ONRND(2)GOSUB1350,1360
1340 ?&CFF=?&CFF+1:ENDPROC
1350 PRINT"Okay.":RETURN
1360 PRINT"Right.":RETURN
```

Of course the easiest way to enter the listings is to buy the monthly listings disc. The disc is fully menu-driven and is an excellent buy at only £5.95.

The programs have also been made available on 3.5-inch disc for the Arc, Compact and Electron at £6.95. See page 97 for details.

The listings can also be downloaded from Micronet subscription (page 600 600 890A). The Acorn User *software can be downloaded just like any other programs from Prestel. Go to the first page by entering *AUPROGS#. Then the operation is fully prompted. The charge for the software from Micronet is £5.00.*

YELLOW PAGES

TOP OF THE LIST

```
10 REM Double height and width
20 REM by David Lawrence
30 REM for BBC B/B+/M/C/E
40 REM (c) Acorn User October 1988
50 :
60 MODE 4
70 PROCcode
80 PRINTTAB(0,5);"This is normal"
90 PRINTTAB(0,8);
100 PROCdh("This is double height")
110 PRINTTAB(0,13);
120 PROCdhdw("double width as well")
130 PRINTTAB(0,20);
140 END
150 :
160 DEF PROCcode
170 pos=&70:flag=&71
180 oswrch=&FFEE:osword=&FFF1
190 FOR I%=0 TO 2 STEP 2:P%=&900
200 [OPT I%
210 .high
220 LDY #0
230 STY pos
240 .hloop
250 LDY pos
260 LDA string,Y
270 CMP #13
280 BEQ doneit
290 STA block
300 LDX #block MOD 256
310 LDY #block DIV 256
320 LDA #10
330 JSR osword
340 JSR double
350 INC pos
360 BNE hloop
370 :
380 .highwide
390 LDY #0
400 STY pos
410 .hwloop
420 LDY pos
430 LDA string,Y
440 CMP #13
450 BEQ doneit
460 STA block2
470 LDX #block2 MOD 256
480 LDY #block2 DIV 256
490 LDA #10
500 JSR osword
510 LDA #2
520 STA flag
530 .main
540 LDX #7
550 .half
560 LDA block2+1,X
570 LDY flag
580 CPY #1
590 BEQ low
600 LSR A:LSR A:LSR A:LSR A
610 JMP nothigh
620 .low
630 AND #&F
640 .nothigh
650 TAY
660 LDA ddat,Y
670 STA block+1,X
680 DEX
690 BPL half
700 JSR double
710 DEC flag
720 BNE main
730 INC pos
740 BNE hwloop
750 .doneit
760 RTS
770 :
780 .double
790 LDX #0
800 JSR set
810 LDA #8:JSR oswrch
820 LDA #10:JSR oswrch
830 LDX #4
840 JSR set
850 LDA #11:JMP oswrch
860 :
870 .set
880 LDA #23:JSR oswrch
890 LDA #128:JSR oswrch
900 .setloop
910 LDA block+1,X
920 JSR oswrch:JSR oswrch
930 INX:TXA:AND #3
940 BNE setloop
950 LDA #128
960 JMP oswrch
970 :
980 .ddat
990 OPT FNequb(0) : OPT FNequb(&3) :OP
T FNequb(&C) :OPT FNequb(&F)
1000 OPT FNequb(&30):OPT FNequb(&33):OP
T FNequb(&3C):OPT FNequb(&3F)
1010 OPT FNequb(&C0):OPT FNequb(&C3):OP
T FNequb(&CC):OPT FNequb(&CF)
1020 OPT FNequb(&F0):OPT FNequb(&F3):OP
T FNequb(&FC):OPT FNequb(&FF)
1030 :
1040 .block
1050 OPT FNequb(0):OPT FNequd(0):OPT FN
equd(0)
1060 .block2
1070 OPT FNequb(0):OPT FNequd(0):OPT FN
equd(0)
1080 :
1090 .wide
1100 OPT FNequd(0):OPT FNequd(0)
1110 .string
1120 ]NEXT
1130 ENDPROC
1140 :
1150 DEF PROCdh($string)
1160 CALL high
1170 ENDPROC
1180 :
1190 DEF PROCdhdw($string)
1200 CALL highwide
1210 ENDPROC
1220 :
1230 DEF FNequb(b%)
1240 ?P%=b%
1250 P%=P%+1
1260 =I%
1270 :
1280 DEF FNequd(b%)
1290 !P%=b%
1300 P%=P%+4
1310 =I%
```

One of the uses you could put this utility to is speeding up the screen display of this month's Joe's Jottings Ideas Processor.

Put a PROCcode into Joe's listing, so that the machine code from Top of the List gets assembled. Then delete Joe's DEF PROCextend, and replace his DEF PROCdh and DEF PROCdhdw with the faster ones from Top of the List

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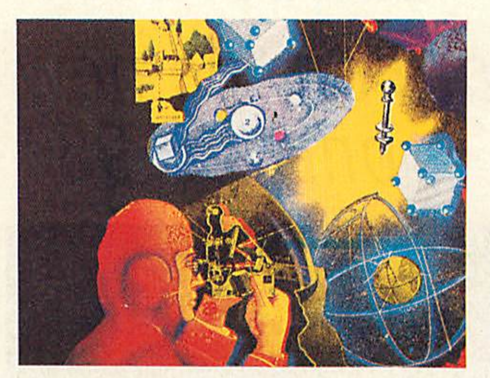
OFFERS

THIS MONTH'S LISTINGS

Using Joe's Jottings for October, an ideas processor, you will be able to plan and lay out all your documents, plotting headlines, subheads and pointers, before committing to paper.

You can also start playing *Polyominoes*, the thinkers game, try fitting together these five sided shapes to create one spaceless block. We have also repeated last month's *Flow* program.

What better way to go back to school than with *Imagen*, our very own interactive adventure generator? Start writing your own adventures as you play.



The October 3.5-inch disc contains all the programs from Agora including the file-finder facility, David Lawrence's micro clock, and a Demonstration Podule ROM. October's disc comes on a 40/80-track 5.25-inch disc for £5.95 and on 3.5-inch disc for Archimedes, Master and Compact owners for £6.95.

Design your own adventures with this month's disc

DISCS AND BINDERS

For the first time owners of an Archimedes or Compact can guarantee the priority delivery of their 3.5-inch listings discs for only £55 a year. Those of you with 5.25-inch disc drives can still take advantage of our special £40 subscription offer. If you buy both *Acorn User* magazine and the *Acorn User* 5.25-inch monthly discs then you can save an additional £7.50 by subscribing to both for a mere £50.

Keep your copies of *Acorn User* in mint condition with our smart red binder. The binder features a wide spine to hold 12 issues of 200 pages. Only £4.95 ensures that misplaced and dog-earred copies are a thing of the past.

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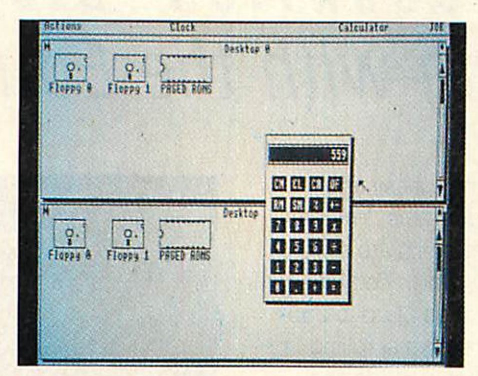


'87 COMPILATION DISC

Acorn User have put all your favourite programs, routines and utilities from 1987 on one disc.

Featured are: Kiddie Art; Tapestry; PCB by CAD; Autumn and Theme, our music programs from April '87. Also on the disc is Joe Telford's GEM-like front end for the Master including a desktop calendar and year planner.

Other useful utilities include a proportional screen dump, a *View* printer driver generator, a monitor-testing routine and a routine for printing spreadsheets sideways.



The second half of the disc is devoted to graphics, with a video image enhancer and six of the best Graphics Bonuses.

The *Acorn User* '87 Compilation disc comes in 5.25-inch 80-track format, with a comprehensive manual which includes all function key strips and instructions needed for the programs.

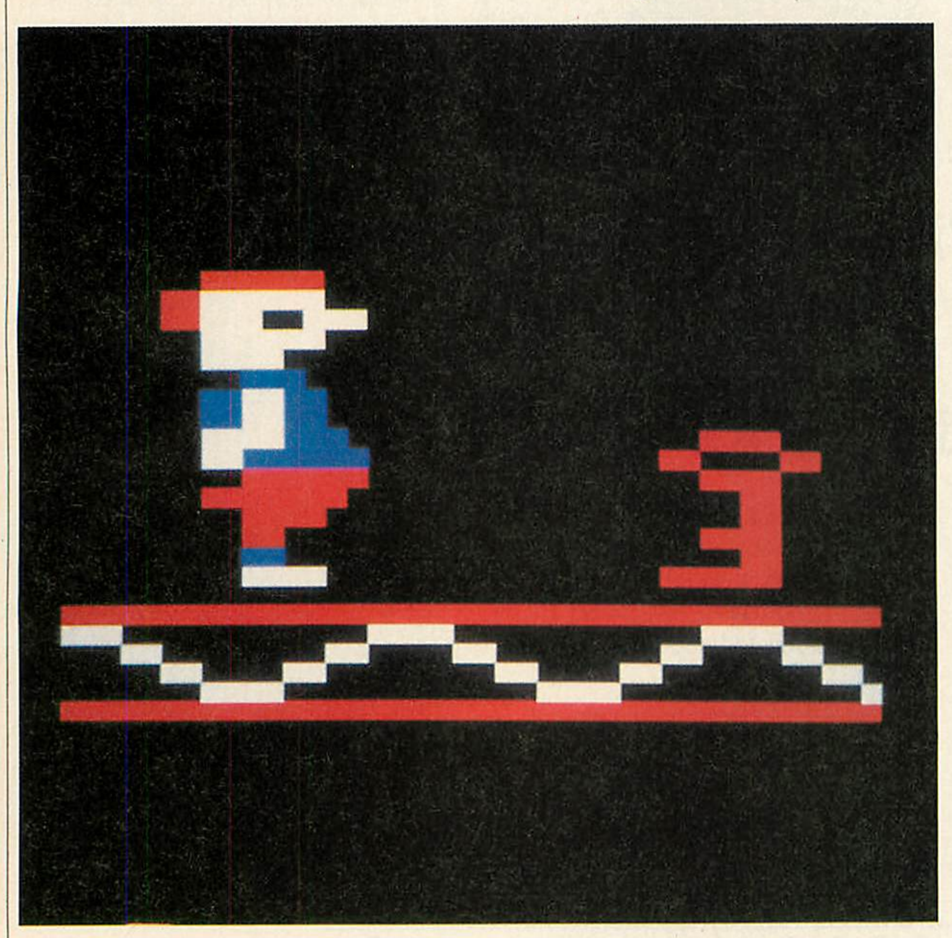
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GAMES DISC

Games galore on the new Games disc only £8.95



Ten of the best *Acorn User* games on one 80-track double-sided 5.25-inch disc. Whether you're into arcade or adventure-type games this new disc has something for everyone. Start stargazing with *Warlord*, our great adventure guide to the galaxy and beyond.

Once you've returned to planet Earth find out the mysteries of *Wizalon*, then you can terrify yourself racing round the *Castle of Nightmares* avoiding obstacles. If destroying submarines is more in your line then discover the murky depths with *Run Silent, Run Deep*.

Trying to fit together *Polyominoes* is as compulsive as *Space Invaders*. Once you have mastered that art, try to get four in a row with *Quadline*. Be lost and amazed in *Acorn User*'s very own maze game.

We have also included three of the most popular one line games from recent Abusers. Test your knowledge with *Mastermind* and start playing *Varpon* and *Lurch* to win. Make sure you get your disc of fun and entertainment and send off for the Games disc today. At only £8.95 its a bargain not to be missed!

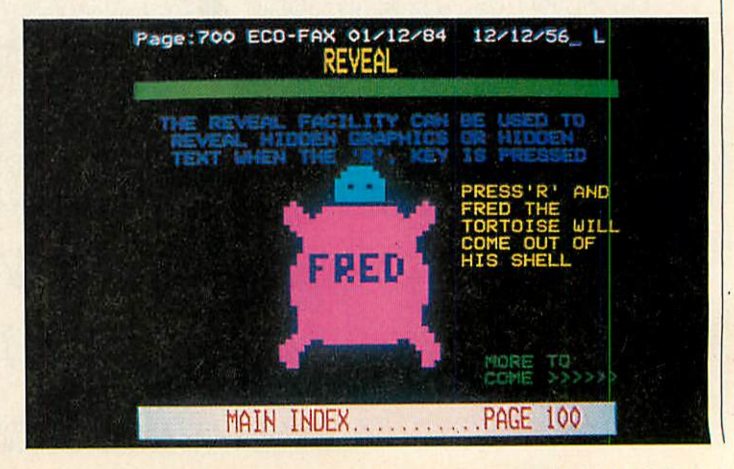
EDUCATION DISC

Easy learning with the Education disc

The *Acorn User* Education disc makes learning easy and enjoyable. The disc is packed with useful programs. You can have fun with our version of Turtle Logo. Graphics are a major feature of the disc and they include *Bulletin*, which converts your micro into an electronic message board. Strings of up to 255 characters can be screened in colourful sideways scrolling letters. Create screens with *Easyplot* and then use the two display programs *Vufoil* and *Noticeboard* to show them off.

There are also two screen dumping programs: an all-mode dumping routine for Epson-compatible printers and a teletext dumping routine which dumps in mode 7 to Epson FX80-compatible printers.

This disc comes in 40-track 5.25-inch format, but is easily transferred to 80-track and is yours for only £7.95.

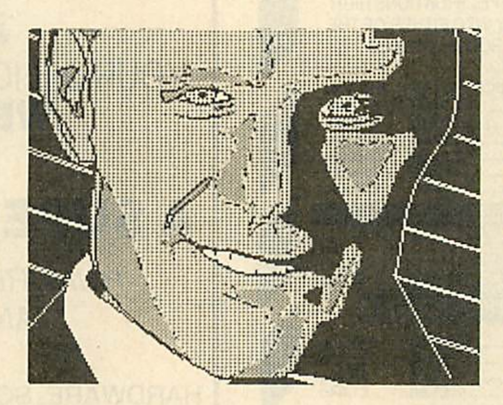


OFFERS

USERDUMP ROM

BBC/B/B+/M/C The *UserDump* ROM will allow you to dump any screen image in any display mode by entering a single command – either as a line of your program or by typing it directly from the keyboard. A perfect dump can also be obtained while a machine code program is running.

UserDump can dump a graphics window, make a distortion-free dump of mode 0 screens using plotter graphics, translate a teletext screen into mode 1, and shift any area of memory.

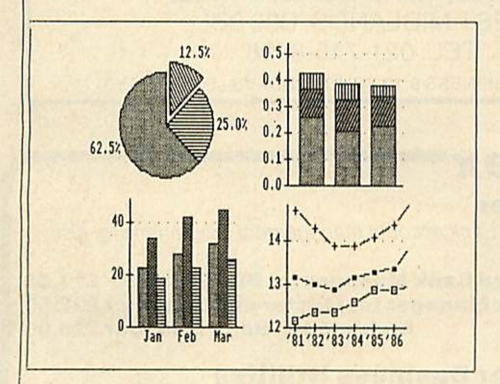


UserDump will work with any Epson-compatible printer which has single-density and double-density bit-image graphics including the Star Gemini, Delta, SG, SD and SR, Canon and Kaga NLQ.

Details of further commands and printer compatibility are available from Seran at Redwood Publishing Ltd, 20-26 Brunswick Place, London N1 6DJ.

Trouble-free screen dumps for £19.95 with UserDump

VIEWCHART DISC



BBC/B/B+/M/C *ViewChart* features a suite of programs which can be used to produce high-resolution graphics in pie chart, bar chart or line graph form. Data can be entered manually, or read from *ViewSheet*, *ViewStore* or *View* files.

Present figures with ViewChart

The charts can be labelled and shaded to give a really professional appearance.

Epson-compatible screen dumps are included, one of which will produce a print-out to the full width of an A4 sheet. Screen dumps for other printers can be painlessly installed.

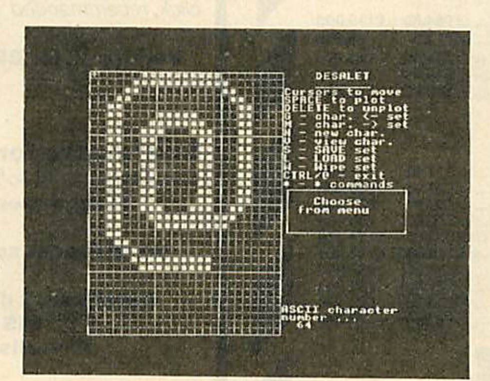
The software is provided on a 5.25-inch 40-track disc (with 80-track converter). And the price of this professional package? Just £12.95.

CALLIGRAPHY DISC

BBC/B/B+/M/C/E Now you can produce anything from professional tickets to letterheads and posters with the *Calligraphy* disc.

Desalet is a font creator which produces customised letters to your personal design and saves you using repetitive data statements and error-prone calculations. All font sets can be up to 94 characters long.

Modical allows the use of disc-based font sets created with *Desalet*. *Modical* incorporates a modified file creation program, which allows files to be printed out immediately or saved for later.



An enhanced font ROM, in the form of a sideways RAM image, allows you to design your own fonts for use on-screen. Any output to the printer will be in the new font – thus giving true Wysiwyg.

This superb disc comes on 40/80-track 5.25-inch disc and is only £9.95.

Design your own fonts with Calligraphy

ORDER WITH THE FORM ON PAGE 96

REVIEWS

THE GAMES PAGE

IO, IO, TO JUPITER WE GO

Circus is the theme of Tynesoft's next game, Superior has invited us to Bangkok, and yes, Sam Greenhill must save Jupiter from destruction

Things are beginning to gather speed again after the summer games lull, as companies gear up for the show season and the Christmas market.

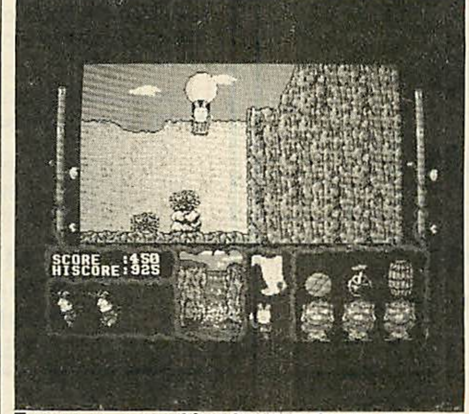
Last month, I was quite wrong to assume that Tynesoft wouldn't have any more simulations until the next Olympics in 1992; in fact it's writing its next one already! The game is to be called *Circus Games* and will involve five events including lion taming (yes, really), trapeze, bareback riding and tight-rope walking.

DC Comics' Superman colour character has finally influenced the BBC software market. With the help of two of the DC cartoonists, Tynesoft is programming a Superman game which is due to be ready for the Personal Computer Show (the old PCW Show) which takes place in September. I can't wait.

The game is very much in the classical mould – it's simple really, all you have to do is save the world – but then I suppose there isn't much else you could do with a plot involving Superman. But Tynesoft is at pains to point out that it isn't like the Atari version brought out eight or so years ago. Dave Crofts also let on that Tynesoft is planning to change its logo and packaging at the show; maybe we'll get some sleeves with our review discs now!

Following the Piper Alpha oil-rig disaster in July, Superior has sensitively decided to alter its *Pipeline* game. The game originally involved a thinly-disguised world famous fire-fighter, Red Adair, whose task it was to extinguish fires on board the blazing rig. Superior says this would have been 'in bad taste' so the game is now set on Jupiter's largest moon, Io.

In the new futuristic scenario, Earth's sulphur deposits are exhausted, so a network of mines has been built on Io to gather alternative supplies – but the mines catch fire, and we take it from there.



Terramex – a graphic adventure for the Arc

The basic structure of the game has not been changed: the screen and character designers remain, but little things – 'keys' have been changed to 'remote controls' – are different. However, the alterations mean that the game's release date has been postponed until September 8th.

But the hot news from Superior this month is a game called *One Night in Bangkok*. It's apparently based on the Tim Rice/Abba musical, *Chess*, currently playing in London's West End. It is another arcade adventure – imagine Bangkok as a giant chessboard. You get an 'Ultimate-style' isometric view of the rooms and each room may have objects to collect or one of 25 small puzzles to solve.

The idea is to collect the chess pieces that have been scattered around Bangkok. The factor that makes the game interesting is that the rules of chess apply at all times. There are opposing pieces that jump around the board, and if one gets in a position where it can take you. . .

The game is written by an author of *Doctor Who*, Alan Butcher, and also features two of the tunes from the musical – 'One night in Bangkok' and 'I know him so well'.

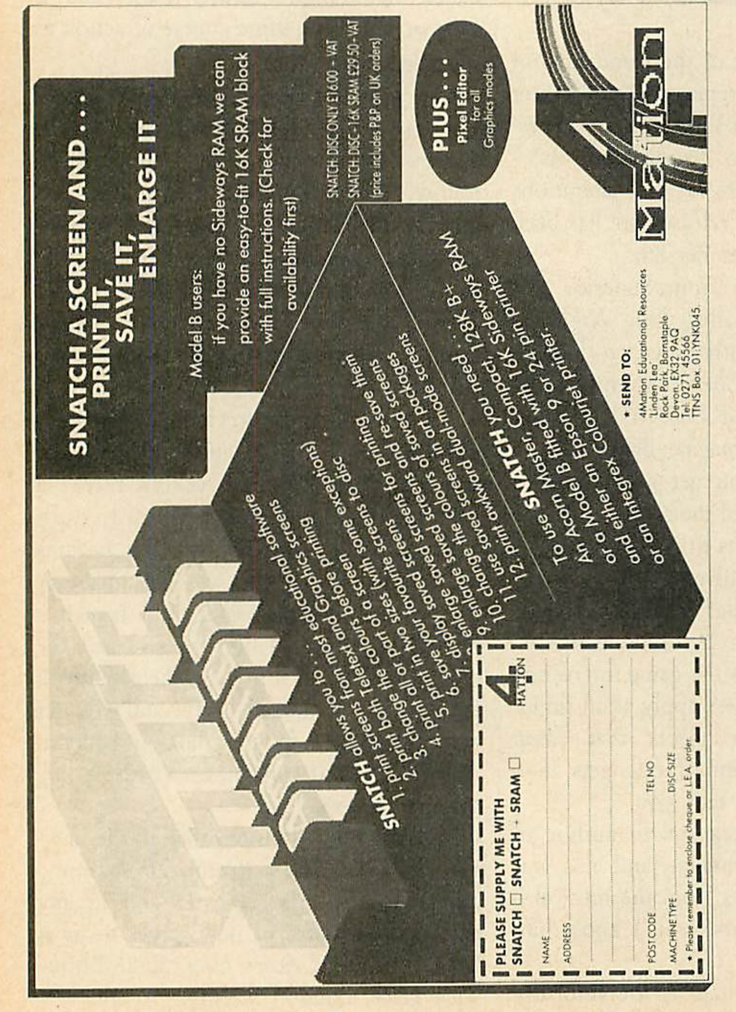
Jeremy San's Argonaut is the company responsible for both *Star Glider* and *Star Glider 2*. The games feature *Elite*-style graphics and *Star Wars*-style action. *Starglider 2* has solid rather than wire-frame graphics, but so far it's available for the Atari ST and Commodore Amiga only. But Jeremy is now happy to say that an Arc version is on the way, to be published by Rainbird by November – just in time for the Christmas market.

Incidentally by the time this article appears, Domark's sequel to *Star Wars* should be in the shops. Inevitably, it's called *The Empire Strikes Back*, and it follows much the same course of action as the film itself.

Last month I mentioned the Arc game, *The Hunt for Red October*, based on Tom Clancy's book of the same name. The game follows the fortunes of a Russian submariner as he tries to defect to the West – complete with sub – hotly pursued by the rest of the Soviet Navy. Publisher Grand Slam is planning a host of conversions for the Archimedes, following immediately with *Terramex*.

As with all games carrying a quirky title, *Terramex* is centred around a complicated story: a crazy professor reckons there's a giant asteroid plummeting towards earth but nobody believes him. Sensibly, he runs off to hide. Then the scientists discover that he was actually right, and launch a search party to find him because he's the only one who can stop it. In the game, you are part of the search party, and you set out to find him in your hot air balloon. Another graphic adventure worth adding to your shelves.

Next month I'll be printing all the passwords for Superior's *Repton Thru Time* – don't miss it. Also, please send in any cheats, high scores or new games to us at the Games Page, *Acorn User*, 20-26 Brunswick Place, London N1 6DJ.



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REVIEWS

GAMES

PICTURE PERFECT PASTIMES



Time and Magik; Mandarin Software; Master 128k, B+ 64k, B+ with SWR, Model B with SWR and Shadow RAM; £14.95 (all versions)

True graphic adventures for the BBC micro are with us at last. Mandarin's *Time and Magik* is a compilation of three old Level 9 adventures; *Lords of Time*, *Red Moon* and *The Price of Magik*, all revised, improved, and with added pictures.

In *Lords of Time*, you must collect nine objects from different time zones. *Red Moon* sets you the task of finding the legendary Red Moon crystal. *Price of Magik* is the final instalment, in which you must save the kingdom of Baskalos.

The 80-track-only 'flippy' disc divides the screen into two: a mode 2, half-screen picture and mode 3 or 6 text below. This allows for full-colour pictures and very readable text. Switching between 40 and 80-column text is simple, just a single key stroke. Although not as detailed as their 16-bit equivalents, the pictures are excellent given the limitations of the BBC. Dithering allows for a whole range of colour and shading effects. Among the 31 different scenes look out for the spooky manor house and the fetid swamp!

Good graphics do not make a good adventure – you need evocative descriptions and a good parser to interpret your commands. Although not the best I've come across, the descriptions help to set the scene admirably. The text is concise and informative.

The rest of the frills include a RAM save and restore facility, and an UNDO command to allow you to take a step back – useful for those awkward meetings with werewolves. Finally, it's possible to recall any command that you have typed in during the course of the game, using left or right cursor keys.

Unless you have a Master or BBC 128, the price to be paid for all this is the cost of shadow and sideways RAM. The game will not work on a standard, unexpanded Model B. With either shadow RAM or 16k of sideways RAM, you'll get text only. Text and graphics need both shadow and 16k of sideways RAM, and for UNDO and recalling all your previous commands, more sideways RAM is needed.

The final conclusion? This game is about the best graphic adventure available for the BBC series.

Robert Miller

RUMBO CAN GO DUMBO

Saigon; Tynesoft; BBC £14.95 (disc), BBC/Electron £9.95 (tape)

Armed with grenades and the latest M16 rifle, Sergeant Rumbo sets out on his mission to free prisoners held captive by communist guerrillas. Basically *Saigon* is the same game as *Commando* – run up the screen shooting everyone.

Bad points first; the disc came without a sleeve and the game took over a minute to load from disc! There doesn't appear to be any pause button, the sound is dreadful and cannot be turned off. The '3D' graphics are odd – you can shoot through walls and bridges. Controlling Rumbo is difficult, the keys aren't user-definable, and bullets are difficult to see against the background graphics. The scrolling is poor, and it is sometimes impossible to dodge a bullet; the baddies shoot even when the scrolling is taking place, but you're frozen until it stops. Grenades are tricky to get the hang of, and for the 'dead of night' sequence described in the instruction, the scenery is surprisingly light! Finally when you quit the game, the protection routines asked mean you have to turn the Beeb off and on again to get back to Basic.

And now the good points; it works, it's colourful, and there is one good thing about the background music that I'm sure you'll appreciate – it can be disabled.

Saigon's good and bad points don't balance. Far from it, the game is third rate. Pull your socks up, Tynesoft, you have proved in the past that you are capable of much, much better.

Sam Greenhill

NO TEETH IN THESE JAWS

Shark; Audiogenic; BBC, Master 40-track; £11.95 (5.25-in disc), Electron/BBC £9.95 (tape)

Green Beret was described as the worst game ever on the BBC in the *Acorn User* 1987 games round-up. *Stryker's Run* was one of the best games, noted for its graphics. *Shark* is a cross between the two: it inherits the *Stryker's Run* graphical style and the play quality of *Green Beret*.

It's set in a troublesome future, when Earth is attacked by aliens. Before long, the whole place is swarming with little green things. You, Colonel Sharkey, have been called in by the World President to save all.

The game greatly resembles the *Rambo* films – it's one man against the hordes. Of course Sly Stallone's movement keys can't be redefined, nor the colour of his skin changed for the benefit of those with black and white sets, but these two features are built into *Shark*.

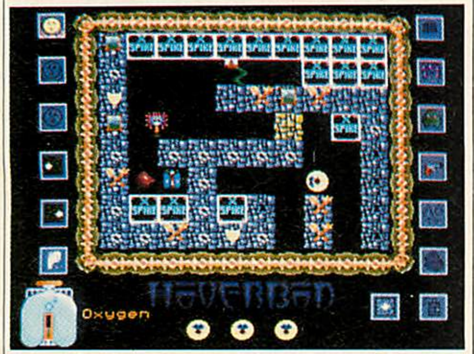
The game itself is set in three locations: a jungle, a factory and a deserted city. The background graphics are reminiscent of *Palace of Magic*, *Wallaby*, *Codename Droid* and a host of others.

Armed with a gun, you progress along a landscape that smoothly scrolls past, zapping the aliens and jumping or ducking now and then. Helicopters and jeeps also try to stop you – more hits are needed to destroy these than the foot soldiers. If you're lucky, when an alien dies it leaves behind a back-pack (for some reason it remains suspended in air). If you pick it up, your character becomes enhanced in some way – with a more powerful weapon or total invincibility perhaps.

Shark is nothing new; the formula is painfully ancient and the sound is dull. *Shark*'s graphics are the only thing that could possibly save it. I enjoyed my first few games, but it didn't have the power to hold my interest for long. Audiogenic must try harder.

Sam Greenhill

DEATH TO THE IBBY-SQUIBLIES



Hoverbod; Minerva Systems; Arc 3.5-inch disc, £14.95.

The third game from Minerva sees a venture into arcade adventures. It makes you the eponymous *Hoverbod.* Your aim is to hover about, collecting diamonds from each of eight levels, and gain access to the final, super-level – *'The Quest for Wings'.* Feathers must be collected from around the maze to make your wings.

There are a number of meanies to stop Hoverbod. They float around the screen, killing on contact. There are also a collection of traps and blockades to impede Hoverbod's movement. Portcullises drop down, blocking any return route, and one touch of an overhead spike proves fatal.

Generally, the whole screen looks attractive and well layed out. Various icons are arranged around the screen, including an oxygen tank that shows the amount of time you have left, and 'Hoverbod' is displayed on the screen in a font not unlike that designed and used by the famous fantasy artist Rodney Matthews.

The game, like Minerva's previous releases, is written almost entirely in Basic. The mode 12 display allows lots of shading effects on pipes, spheres and the like. Sprites move pretty smoothly considering the program is in Basic. But there is one point where Hoverbod appears to split into two and flicker quite violently around the screen. And the meanies speed up when you move! This really shouldn't happen on any program written for the Arc.

Sadly, controlling *Hoverbod* is difficult, with hovering very unpredictable. Sometimes you are able to hover left and right, but as soon as you float over a hole in the ground, you plummet to what is more than likely your death. I know it's exactly what would happen to, say, a hovercraft, but I found it annoying.

In order to destroy the Ibby-squiblies, you must have a gun. This can shoot left, right or both ways, as indicated by some arrow icons. But sometimes you can shoot both ways when only left or right is indicated. Other failures of attention to detail make gameplay less than absorbing. With a little more thought and time spent on tidying up the loose ends, perhaps, *Hoverbod* could have been a much more enjoyable game.

Robert Miller

DROPPING A BRICK

Fireball; Go-dax; Arc 3.5-inch disc, £14.95.

Go-dax has released the first Arc version of *Arkanoid – Fireball.* There's really not much difference between it and the original. However, being on the Arc, there's potential for better colours and so on.

For anyone who missed all the BBC micro versions of *Breakout* and *Arkanoid,* the game is basically a spruced up variation of bat-n-ball. Inside a two dimensional arena, you control a bat at the bottom of the screen. Using the mouse, it can be moved left or right. The ball bounces off the walls until it comes back to the bottom again, and if you aren't there to knock it back up, you lose a life. Of course there aren't just walls to deal with; an array of bricks are arranged around the arena. You have to destroy the bricks with the ball. However some special bricks are invisible, some need to be hit twice, others are immovable and a few even drop bombs. Some drop bonuses, which can slow you down, or increase your firepower. Some capsules give you lasers, and also a 'plough' mode, where the ball only bounces off the walls with your bat destroying all the bricks in its path.

There is a pleasant background music track that sounds good through headphones, and a nice graphic background for the arena. The disc also contains a screen designer for your own levels.

Control of the bat with the mouse is too sensitive, and when you die, nothing much happens – the game just continues with one fewer life. But I very much enjoyed playing *Fireball* and recommend it to Arc owners looking for a Super-Breakout.

Sam Greenhill

FLIGHT OF THE SPRITE



Alerion; Dabs Press; Arc 3.5-inch disc, £14.95.

Alerion is a vertical-scrolling shoot-em game. You fly over a landscape, shooting at everything that moves and most things that don't. You choose whether to target ground or flying targets, but the default control keys are quite fiddly.

There's a nice fade from the instructions to the game and back, and the 256-colour play screen has good, smooth scrolling. There are lots of fast-moving, colourful sprites, but they aren't very big, and they're not all that successful at portraying the smooth tumbling and twisting movements. Only one object, your plane, has a shadow; all the other '3D' effects just don't look right.

Some of the sprites, particularly your plane, are difficult to see against the landscape – a repetitive mix of field, forest and water. This is particularly bad when explosions and craters pockmark the land. It could be that there are just too many colours similar to each other.

The digitised sound is good, but limited to plain gunfire and explosion sounds, plus two digitised words, 'Home' and 'Wave'. These are vital, as there's no other indication that you've reached your objectives. The home bases are a nice idea; you go back as far as the last one you reached when you die.

In all, full of good things, but not worth £6 more than the near-identical *Quazer.*

John Abingdon

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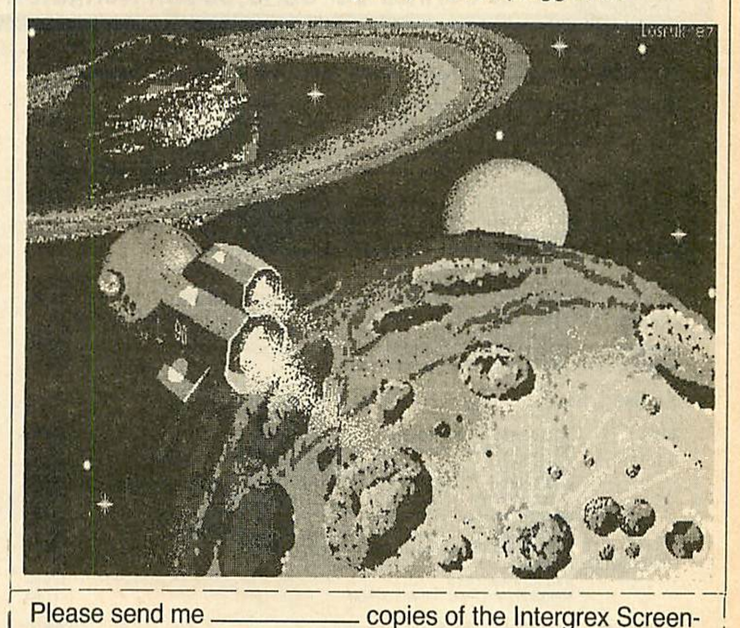
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SOFTWARE

IN COMMAND

Beebug's internal modem for the Master has been a long time coming
Chris Dobbing couldn't wait to try it out

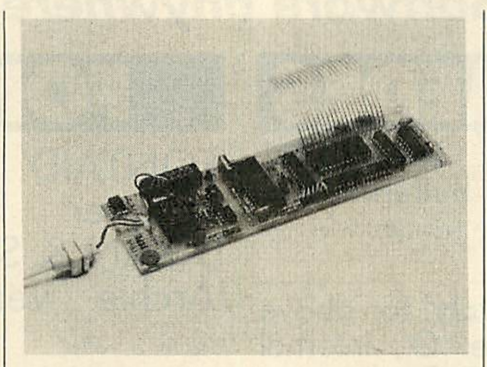
When the Master first arrived it was fairly obvious that the space between the mother board and power supply was for an internal modem.

Although Beebug has been displaying its prototype internal modem at exhibitions for nearly a year it has, quite rightly, only started selling them now that full BABT approval has been granted. In fact, approval had to be granted to the whole Master 128 – because the modem uses the Master's power supply. Some modification of the modem was required, and all has now been finalised.

Beebug's Master modem is a competent auto-dial and auto-answer device which works with both V21 (300 baud) and V23 (1200/75 baud) standards. It allows you to listen to the telephone line too, through the computer's speaker. Beebug's ROM-based *Command* software, a utilities disc, keystrip and user guide are all supplied. Installation is fairly straightforward, but the batteries occupy the space for the modem. You will have to buy the new-style battery pack which tucks into the slot at the left-hand side of the keyboard. These are available from Beebug and other Acorn dealers for about £4. Before you remove the old battery pack, note down your preferred configuration settings (typing *STATUS will display them), so that you can *CONFIGURE the machine to your requirements after fitting the new one!

The modem slips easily into the space provided for it and is secured with two screws. It is connected to the computer with a ribbon cable. This cable, rather surprisingly, ends in bare wires which have to be lined up and inserted in an edge connector on the motherboard and then secured with a plastic clamp. Another cable connects to a proper plug near the Master's loudspeaker and the telephone lead fits into an existing slot at the rear of the computer.

The *Command* software is in a 16k ROM which has to go in the middle of the three sockets – IC27. If you already have a ROM here you'll have to move it to a cartridge or give up two banks of sideways RAM and use one of the adjacent sockets.



The space-saving internal modem

Command is initiated by entering *VIEWDATA (or *TEXT). The screen clears except for a status line at the bottom which includes a time display showing how long you have been on-line – very useful! Control is via the function keys and a keystrip is provided. To dial out, you simply enter the required number (or select one from the directory). I had no problems with direct exchange lines or a PABX (where you have to dial 9 for an outside line). The modem can use the traditional pulse-dialling, or if you have a new system X-style telephone exchange you can set it to use tones instead. The Master's internal speaker allows the progress of the call to be heard. It is silenced as soon as a connection is made.

The utility disc has a preset directory of some of the more reliable bulletin boards, both text and viewdata, so you can get on-line to something interesting straight away. You can very easily add your own favourites, and the disc also stores the configuration data and log-on strings as well as the phone number.

The viewdata terminal is well designed and has all the functions you would expect, including frame tagging. The telesoftware downloader works well and has a 26.5k buffer enabling very large files to be downloaded without long pauses, as chunks are saved to disc. The utilities disc has a printer dump ROM image that must be loaded into sideways RAM before screens can be dumped to a printer. The screen dump works with text and mode 7 graphics, and with any 'Epson-compatible' printer.

A comprehensive and powerful text editor is included in the viewdata terminal. Mode 7 teletext screens can be edited on or off-line, for saving or uploading to a bulletin board. Several of the well known viewdata boards allow uploading of frames, but on Prestel this is only available to information providers.

The scrolling text terminal can run in 40 or 80-column modes and I had no difficulty in using Telecom Gold and local bulletin boards. It is very easy to set up the directory with the appropriate baud rates, parity, stop bits and log-on sequences. Xmodem file transfer is possible, and I had no problems uploading and downloading long files.

The *Command* ROM offers more than 50 new star commands making it very easy to write programs to log on to a database, leave and collect mail and log off, for example. All the commands are well documented in the user guide and the ROM didn't seem to clash with any of the others I use.

I particularly liked the BAND command which can replace the 'time on-line' display with the number of dialled units used!

Many of the commands are for the modem's auto-answer mode, and will make it fairly easy to write bulletin board software. A simple host program is included on the utilities disc, which could easily be adapted to provide some of the more sophisticated facilities you find on the well established boards.

An internal modem saves a lot of space and means less clutter around the computer, and this one is cheaper than many others of a similar specification at only £119. The Master internal modem has been a long time coming and many established comms enthusiasts will be happy with their existing equipment. But Master-owners considering comms for the first time, or upgrading to auto-dial/auto-answer, should seriously consider this excellent new product from Beebug.

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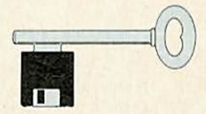
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PIPEDREAM ON PARADE

Pipedream tries to unlock barriers between different micros, and between wordprocessor and spreadsheet, Graham Bell judges how far it succeeds

Most people who know the BBC micro will have already met the latest competitor in the Archimedes wordprocessor stakes. It's been available now for over a year on the BBC micro, under the name of *View Professional*. But it is with the Z88 version that *Pipedream* came to real prominence – it is the reason that machine is as useful as it is. Now Colton Software has rewritten *Pipedream* to run on the Archimedes and the IBM PC as well, and all the versions are file-compatible.

Both written mostly in C, the two new

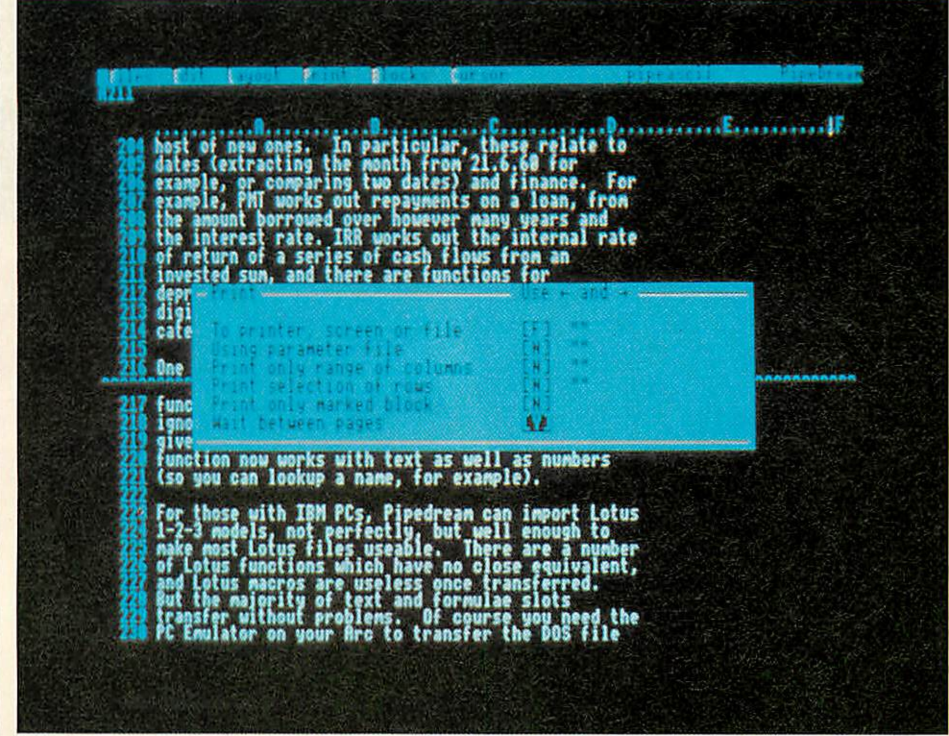


versions share much of their program code, and look and feel very similar in use. *Pipedream* doesn't make use of any fancy graphics or the built-in windows, icons or pointers of Arthur, nor does it run under GEM or Windows on the PC. But it does use its own simple drop-down menus, selected from a bar across the top of the screen. *Pipedream* comes with manual, function key strip and a single 3.5-inch disc. The manual is excellent, with a beginner's tutorial section, lots of examples and an in-depth reference section.

Installing *Pipedream* is relatively simple, but make sure you do it on a back-up copy of the disc and not the original, because the process is irreversible. It's hard to get it wrong, and the installation process lets you put *Pipedream* on a hard disc if you want. You must put a copy of the floating point emulator (FPE) on any *Pipedream* disc you create; there is one supplied, but the version on your Arc Welcome disc may be more up to date.

Once installed, you can start *Pipedream* with a *PD command. It'll work in any 80 or 132-column mode – taking its cue from the current mode. It takes a few seconds to load, and then you're presented with the main editing screen.

Apart from the drop-down menu: it'll look familiar to anyone who's used *View*



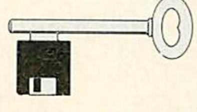
The main editing screen of *Pipedream* with the 'Print' dialogue box

Professional or a Z88. Everything defaults to some sensible value, and you don't need to know anything about *Pipedream* to get started. Sensibly, the screen reminds you that 'F1=HELP'. But what it doesn't tell you is that to get at any of the menus, you have to press ALT plus the first letter of the menu name: ALT-P for the Print menu for example. You must be wary of the Tab key – don't use it to indent paragraphs.

Editing text in *Pipedream* is *View*-like in that most of the commonly used functions are accessible from the function keys. But unlike *View*, there is a full menu system too, and there are single-key short cuts to the functions. So to delete from the cursor to the end of a line, you could press ALT-E for the Edit menu and select the function from the menu, you could press f4, or you could just use ALT-D.

Not all the editing functions are available from the function keys. But you can define new function keys in combination with ALT, and even replace the standard set. You can in fact redefine any key on the keyboard, so if you want to type in Icelandic, you can set up keys to type the necessary non-English characters.

Pipedream is acceptably Wysiwyg – italics and bold are shown on screen, as are



page breaks, but headers and footers are not. Printing is simple, but the text can be previewed on screen or sent to a file.

You can set up a start file that stores any standard text you want at the beginning of every document. You can even include key redefinitions and macro definitions, but you can't save preferred screen colours.

There is one serious quibble I have with the editing part of the *Pipedream* wordprocessor, and that is the difficulty of block operations. You can't start a block in the middle of a line. So a typical change like moving a sentence is extremely com-

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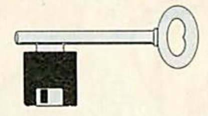
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plex. The only other problem I have with straightforward text in *Pipedream* is that most of the format information is global. That is, things like the width of the text and the line spacing have to be set, once and for all, on a document-wide basis. So you can't change line spacing from double to single and back again.

Printer support is a little sparse: there are drivers for the Juki 6100 and Epson FX80, and the manual explains clearly how to produce new ones. But it's the printer's manual that is often the problem, so it would have been better to have a wider range of pre-defined drivers.

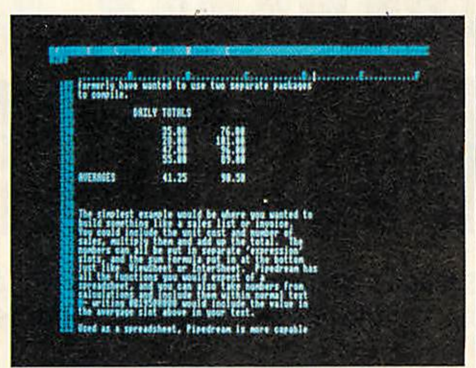
There are compensations, in the form of multiple column-working. You can select the width of each column individually, and also the wrap width. This is the maximum length of the text on a line, the point at which words jump onto the next line. It is slightly confusing that the display and wrap width of the line should be different, but this does allow the same mechanism to be used for both multi-column text and ordinary text with tables. But this multi-



column ability doesn't extend to making text flow from column one on a page to column two.

The point about global formatting is alleviated because a document can span several files, each with its own 'global' formatting information. Sometimes this is acceptable, but it does mean that double-spaced reports with lots of single-spaced quotes need a long list of files. Moving from one file to the next doesn't happen automatically; you must type ALT-FN to move to the next file in the list.

All this makes *Pipedream* a competent but not exciting wordprocessor. However, it has two great advantages over other application programs. First, you can run it on a variety of machines. And second, it is also a spreadsheet. You can include groups of numbers in the text, or in tables of calculations, and they will automatically recalculate when you change the data. This makes it ideal for writing technical documents. Having the elements of a spreadsheet and wordprocessor together allows 'hybrid' documents to be written. It's not like spooling numbers from a spreadsheet



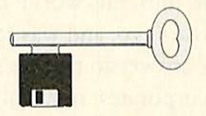
***Pipedream* is also a spreadsheet**

and reading them into a document. In *Pipedream*, all the formulae and numbers stay 'live' – they still recalculate if you revise the data.

The simplest example would be where you wanted to build something like a sales list or invoice. You could include the unit cost and number of sales, multiply them and add up the total. The numbers can all be put in separate 'expression' slots, and the sum formula put in at the bottom just like *ViewSheet* or *InterSheet*. *Pipedream* has all the functions you would expect of a spreadsheet, and you can also take numbers from calculations and include them within normal text – writing @B20@@@@@ would include the value in B20 in your text.

Used as a spreadsheet, *Pipedream* is more capable than *ViewSheet*, *InterSheet* or even *SigmaSheet*. It has all the usual mathematical functions, plus a host of new ones. In particular, these relate to dates and finance. For example, PMT works out repayments on a loan, from the amount borrowed over however many years and the interest rate. IRR works out the internal rate of return of a series of cash flows from an invested sum, and there are even four different functions for depreciation.

One important point with *Pipedream* is that with functions like AVG (average), blank cells are ignored, whereas with *ViewSheet*, blank cells are given the value zero. Very usefully, the LOOKUP function works with text as well as numbers.

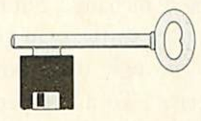


For those with IBM PCs, *Pipedream* can import Lotus 1-2-3 models, not perfectly, but well enough to make most Lotus files usable. There are a number of Lotus functions which have no close equivalent, and Lotus macros are useless once transferred. But the majority of text and formulae slots transfer without problems.

The speed comparisons carried out by Dave Futcher and reported in last month's *SigmaSheet* review show *Pipedream* to be fast – it uses the floating point emulator module, so when a hardware floating point podule becomes available, the maths will become even faster.

Continuing the comparison, *Pipedream* does have a way of looking at two sections of the sheet at once, which *SigmaSheet* lacks. You can 'fix' rows above or left of the current cursor position, and then scroll across the sheet to another area.

Some spreadsheet functions like MIN and AVG can be prefixed with D. DMIN will find a minimum value, but the value has to satisfy some condition – so



DMIN(A1A100, 'A1>1.1.88') searches for the earliest date after January 1 this year – dates last year will be ignored.

These D commands are aimed at making it possible to use *Pipedream* as a database. It isn't ideal, as you really have to stick to one record per line, with each field in a particular column. But you can search for particular records, sort them into order according to any column, and even produce standard letters. The sorting function is really useful for putting lists in order when you're writing normal text, and a name and address list is perfectly feasible.

It seems that *Pipedream* is the 'do-everything' program. So what doesn't it have? There isn't any way of including graphics in a document, and there isn't any spelling checker. And you can't even find out how much memory there is left! It also doesn't use the Arc's WIMP system, but I think that consistency with the other versions of *Pipedream* is as important as consistency with other Arc applications.

For writing letters or books, I doubt whether I'd choose *Pipedream*. But for business reports with a mixture of numbers and text, you can't beat it. And if you have a Z88 or a PC to swap files with , then I'd say *Pipedream* is almost indispensible.

Pipedream, *Colton Software (0954) 211472, Archimedes, £113.85.*

MINDS OF INFORMATION

Independent Television has made significant strides in the world of computer education and is producing some worthwhile software to support its *Key* database

Chris Drage and Nick Evans



ILLUSTRATION BY AXEL SCHEFFLER

It has always been assumed that the British Broadcasting Corporation holds the monopoly on TV and broadcast services linked to computer education. Not only do most Acorn computers carry its badge, but the BBC also publishes its own software in great quantity and quality through BBC Soft – part of BBC Enterprises. To many people, then, it comes as a shock to realise that Independent Television not only produces its own software and support materials but has made massive inroads into the education market with its low-cost database management system called *Key*. This sophisticated package offers more and better facilities than many more expensive systems, and the software has been specifically designed to fit into the educational environment. Teamed with particular datafiles, it services the needs of all the programmes broadcast by the various companies coming under the ITV umbrella – Anglia, YTV, Central, Granada and so on.

This linking of datafiles to the schools programmes being broadcast offers teachers ready-made data for classroom development of those transmissions. There are also support materials in the form of work sheets, topic cards, data-logging, copying masters and suggestions for teachers. As far as ITV is concerned this means that there is, to a certain extent, a captive audience and a ready market. The BBC of course has this too. The difference is that the BBC does not yet have a dedicated database system, and it has never really ventured into the realm of information handling other than on a fairly superficial level. But ITV is beginning to build up a surprising number of datafiles, complete with support materials, both as a result of twinning them with transmissions and also through development of datafiles by outside agencies.

Key burst into the world of education about two years ago, and was seen by many as a sensible answer to teacher's needs. The package incorporates not only the usual ability to store, search, select and sort, but also features a powerful graphing utility and a mapping module which allows data to be given co-ordinate attributes and then plotted on a map or plan. The system may also be used at a number of levels, from single-key entry of commands for the youngest users right up to a sophisticated interrogation language for the more advanced. The nature of its query language approaches natural language more closely than, for example, the ever-popular *Quest*.

The database system has a complementary utilities disc which allows you to import datafiles from other systems so,

for example, if you use *Quest* or *ViewStore* then it is possible to convert your datafiles to *Key* format so that they may be read by the system. The main *Key* disc costs an amazing £4.95 for BBC and RML 480Z versions, and £6.95 for a Nimbus version. The Utilities disc costs £1.73!

No database system is much use without datafiles. Although you might want to create your own from scratch, it is much easier to learn the system with a ready-made file – especially if that file is linked to a TV series that your class uses. It should be emphasised that the datafiles are in no way dependent on the TV programmes. They can certainly be used in your own curriculum structure, without having to use the transmission. But, should you be thinking of using ITV Schools broadcasts, it would make sense to take advantage of the very useful programme information service which is available as a *Key* datafile. Details of all schools broadcasts may be obtained from the IBA.

Out of a planned fifty-one programmes to be broadcast for ITV Schools in the coming academic year, twenty have computer software directly related to them. Many are *Key*-based, others are dedicated packages created specifically for the programmes. The datafiles associated with previous broadcasts are of course still available too. The earliest, which was originally sold as a demonstration file, is 'Placenames'. It provides you with information concerning the origin of towns' names.

A series of wildlife datafiles classify a wide range of the fauna of this country, giving children the opportunity to examine the distribution, habitat, habits and, in the case of seafish, the catching methods and statistics. These packs come complete with printed support material. In this '*. . . of Britain and Ireland*' series there are files on birds, mammals, minibeasts, seafish and freshwater fish.

Under the science heading, useful resources for both environmental and scientific studies are provided in a number of packs. The *Science – Start Here* pack contains a set of three files, 'Weather', 'Birds' and 'Myself', which are aimed at the 8+ age range. These encourage a child's first steps in data-logging and analysis, for example by using statistics which the children collect about themselves, or weather data collected from a variety of meteorological stations which are presented as ready-made files. This type of 'research' work is seen as an ideal method of getting children to understand the collection, storage, retrieval and interpretation of information.

In the second science series pack, one datafile, 'Food', examines children's food intake and analyses it in terms of its nutritional content and energy value. Under the same general heading of food science, a more advanced package, *Fit to Eat*, which is designed for secondary school use, allows pupils to assess the suitability of their diet for their own individual body size, level of activity and so on.

'Acid drops' is a datafile with important information for the environmental studies syllabus in secondary schools. It records data from a large number of sites across the United Kingdom relating to rainfall and acidity levels. The support materials encourage investigation of the relationship between these facts and a number of variables in the environment.



***Key* – a future-proof system?**

Other packages examine Craft Design Technology issues – for example '*Materials: Investigation and Choice*' provides a quick reference guide to the suitability of particular materials for particular tasks. 'Mail Order' is a datafile aimed at the Computer Studies and IT awareness classes. It allows pupils to set up a simulation of a mail order company, complete with a computer-based wholesale catalogue that even includes graphics – a powerful feature of *Key*.

Other titles are being compiled by the ITV companies in response to the needs of its programme producers, but they are not the only sources of information. Many computer users find census material invaluable as an adjunct to history, local studies and social studies work. Short of actually typing in the census returns yourself, it is a difficult task to get hold of that type of information on disc. There now exists a service which will give users an abstract of their local census data for 1981 along with seven other standard files for a variety of areas across the country. Although these files don't come in the *Key* format, a program included with the suite allows the user to abstract data in *Key* format to be taken away and used independently. The package includes maps of the relevant area and costs £19.95. Requests for further information should be sent to Nigel Walford at the ESCR Data Archive.

In addition to the normal disc format *Key*, is now available for Econet levels II and III, and soon there will be an ADFS version for Master and Compact users. As well as its low price, its virtue lies in the ease of creating your own dedicated files. Unlike many of its forerunners, *Key* holds the user's hand all the way – if you want it to. This means that novices can benefit from its power while still discovering its potential, but more experienced users can tap its facilities more flexibly and configure them to his or her needs.

The creation of new datafiles is simplicity itself, as the software asks for the relevant information and ensures that you understand what is taking place. So, for instance, the entry of field names and types is not only governed and checked during creation, but may also be edited after the file has been built. This flexibility means that the ways in which information is presented can be varied according to your needs.

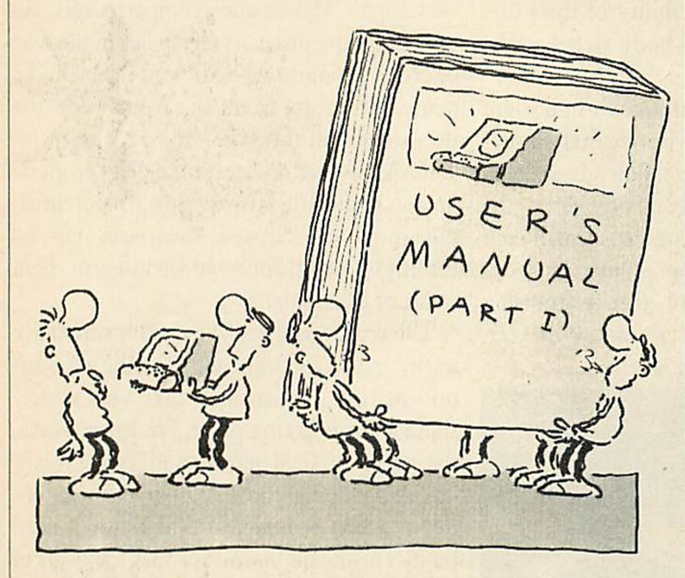
The more sophisticated facilities such as graphics and mapping obviously require a good deal more skill. The best way to learn is to gain a thorough knowledge of the package's normal facilities, and then to examine the workings of an example datafile. This will demonstrate one of the methods for using the advanced facilities.

Key has had a major impact on the computing community, partly because of its power and low price, but also because of the speed with which relevant datafiles have been made available. The creator of the system, GSN, will now need to look forward, and consider increasing the power of the package and making it even easier to use in the windowing environment provided by machines like the Archimedes. If it maintains compatibility of file structure, so that files may be passed between the old and new machines, then it will have a truly future-proofed system.

Key *may be purchased from ITV Association, 6 Paul Street, London EC2A 4JH.* Key *is programmed by GSN Educational Software, 50 Stamford Street, Ashton-under-Lyne OL6 6QH. ITV schools programme listings: send formatted 40-track disc to Pat Nixon, Education Department, IBA, 70 Brompton Road, London SW3 1EY. Census material: ESCR Data Archive, University of Essex, Wivenhoe Park, Colchester CO4 3SQ.*

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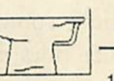


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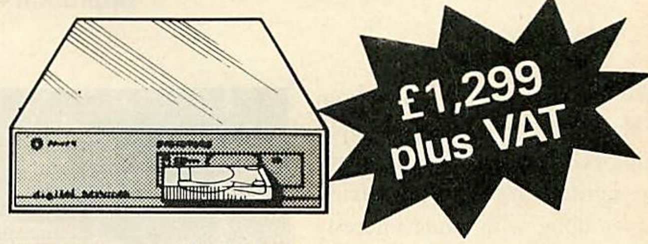
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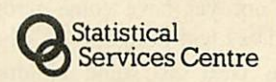
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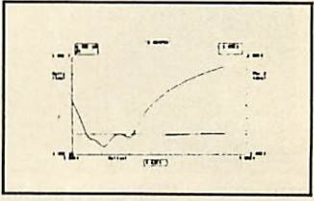
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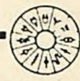


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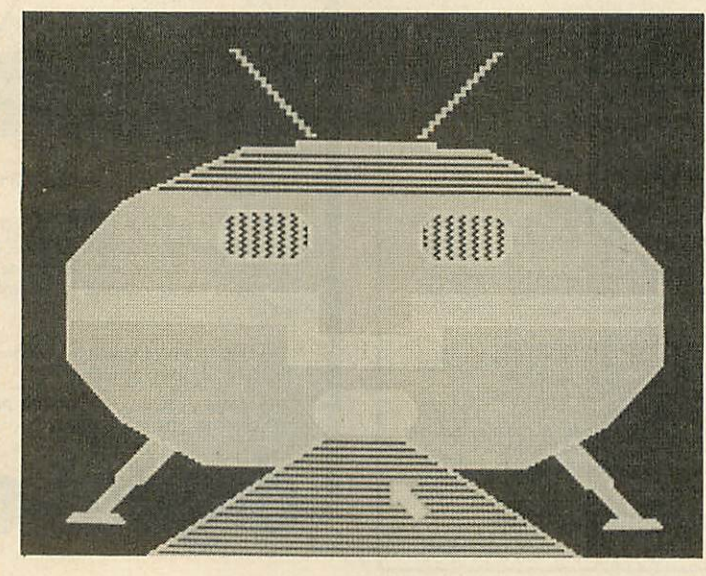
Marshal Anderson looks at a package that could herald a new educational approach – one without words

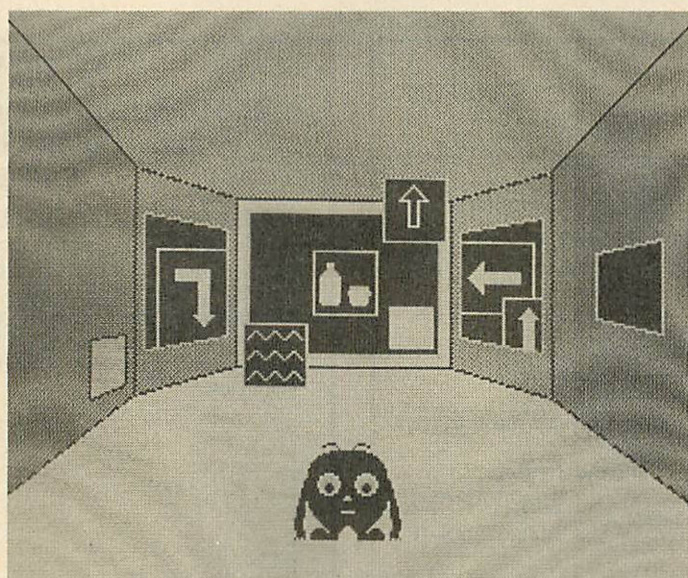
World without Words from 4Mation is a package for upper juniors that sets some fairly straightforward problem-solving tasks along with some interesting open-ended activities. It's all wrapped within excellent graphics, but is presented so that, at first sight, *World without Words* can seem shrouded in mystery.

The package contains a wealth of resources – posters, booklets, even a braille card – but the program puts you into an environment that uses no written language to communicate and only a pointer for input. This pointer can be linked to any of the input devices common in schools; Concept keyboards, trackerballs and the like.

The program opens with the arrival of an alien spaceship; the child is faced simply with the ship and the pointer. Clicking the pointer over the ship moves you closer. By experimenting with clicking buttons while pointing to the outside of the ship, you enter a control room. Then, by experimenting with various controls, you discover the package's different facets.

The activities are either closed or open-ended. The closed exercises pose imaginative, if unsurprising, problems to be solved. There are robots to be built, an alien landscape to be explored and bits of machinery to be collected and assembled in a sliding block puzzle. You must also build a network of pipes, solve a mini graphic adventure and deal with something called 'Sparklies' which defies description but is a fairly straightforward strategy game. Several of these activities are reached via a sort of on-screen Rubic cube; using rotating blocks to create arrows that point in different directions, thus accessing different screens. And this is perhaps the main point about these activities; there is no instruction as to how they must be completed. It is all about exploration and interpreting the signs on the screen and their effects.





With only a pointer to help, children find their way into the spaceship

The open-ended parts of the program offer huge scope for creative work. The 'Picture Book' contains a series of line drawings of the adventures of an alien character. Each picture may have one vital component changed; the choices lead to different pictures building up different stories. The program allows a child to colour in the pictures and print them out and so provides a springboard for all sorts of written work, drawings and even drama.

The other open-ended section is the 'face processor'. After working out the controls, this lets you construct and animate faces using a variety of predefined mouth and eye shapes.

The potential of this activity is vast; like the whole program you first have to admit 'I don't have a clue what all this is about but I'm going to find out'.

Most junior school children will not yet have come across windows and pointers. This became clear as some children spent a good deal of time running over blank areas, clicking at different points and getting nowhere. One of the objectives of the software is to let children discover for themselves, but there must also be input from the teacher.

At the start there is only one problem – to get into the ship; children were able to guess what was expected of them quickly, but once inside the ship reactions varied. One extremely bright 10-year-old took charge of her group when she discovered the picture book; she spent nearly an hour exploring different shadings, and explained afterwards that it was great to be able to colour in pictures, as she felt she was normally such a poor artist. Other children tended to flit around more, trying different tasks, getting so far and then quitting – any task may be left at any time, it doesn't have to be completed.

A very important factor in the class exploration was the exchanging of knowledge between groups as different discover-

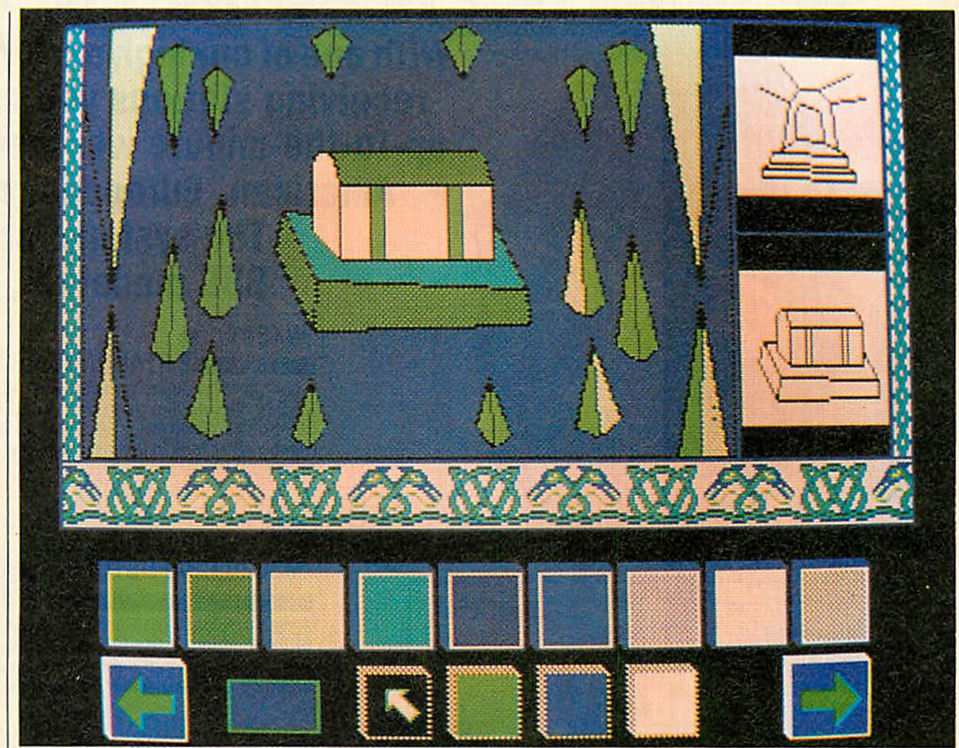
ies were made. As the children used, and became familiar with, the program, it became apparent that this is a Logo-like activity, the *World without Words* is filled with 'objects to think with'.

The accompanying resources reflect this approach, and are all based on the theme of communication. Among the items is a book of three thoughtful short stories, which reflect some of the concerns evident in earlier work from 4Mation. Plus there's a pupil's book containing examples of many forms of communication, a poster and a tape of atmospheric music. All these are merely starting points, they demand exploration and experimentation from both teacher and pupil.

It is quite possible that substantial parts of this program will be used in a more structured way, but that doesn't appear to be the intention. *World without Words* presents you not only with a software package, but also invites you to accept a particular educational approach.

Having said that, there is no doubt that the teacher's guide provides a wealth of concrete suggestions for the classroom – you are encouraged to be open-ended in your approach, but you are never left alone, floundering for follow-up ideas. I found the section relating the rather abstract problem-solving activities with real-life activities and situations both useful and practical.

Certainly this exciting new package opens up the creative end of education generally, via the computer and the rest of the media resources. Let's hope that there will continue to be a place in schools for it.



A selection of colours may be used to fill in this skeleton picture

Children can create their own pictures by moving objects with the pointer

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At last the long awaited sequel to the excellent Ravenskull. The game is in a new scenario, the moon Io, and it is your task to prevent mutant androids from destroying the Sulphur plant which is providing Earth with much needed resources. Infinitely superior to Ravenskull, Pipeline features larger screens, more puzzles and superb graphics and screen designer to allow you to create a whole new game if you wish. Highly recommended.

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ALL ABOARD

Dave Marshall looks at a package that can see a classroom turn into a diving expedition to recover the treasures of the *Mary Rose*

'Your good ship, the flower I trow of all ships that ever sailed.'

Sir Edward Howard reporting to Henry VIII – 1513 – about the *Mary Rose*.

Four years ago I came across one of the best projects I ever saw based around a piece of software. A class of children had 'discovered' the *Mary Rose* in the middle of the Solent and had then 'dived' to explore the wreck – all in the relative comfort of their classroom. The software was the original *Mary Rose* (original software that is – not the ship!). This began its life with the Cambridgeshire Software House, although it was marketed by Ginn at the time. Now there is an updated version from CHS and the potential for project work is even better.

Like all true educational simulations the computer creates an environment on the screen that is away from, but mirrors, the real world. The children can 'become' divers and explorers. They must have some of the skills they would need if they were really scouring the deep for the remains of a Tudor warship. If you know the original *Mary Rose* program you may be disappointed to find that the 'survey' program has gone. This is presumably to reflect reality – everyone knows where the remains are now, they just need to be examined and brought to the surface. So the children take it in turns to dive to the wreck. It's as if the *Mary Rose* had never been lifted. The children can explore the wreck for artefacts, at all sorts of levels. To do this they must clear the mud and gradually reveal the shape of the old ship. Once one level is cleared the children can explore the next.

On booting the disc you are presented with the main diving screen. At the top there is a plan of the site. At the top and the bottom of this there are markers that enable you to fix your position on the cross-section which is shown at the bottom left of the screen. The Diver Information Panel tells you the diver's position as a co-ordinate and his or her depth in metres. There are two dials which indicate barometric pressure and elapsed time. There is also a bar graph that shows the amount of air used. The diver is automatically lifted to the surface when the level reaches the danger point.

If during a dive you should be fortunate enough to discover an artefact, then you are given the message in a box at the bottom of the screen: 'You have found artefact number ??'. Then by pressing R – to Raise – the find is brought to the surface and on to the ship. You are provided with a 'Book of Finds' which accompanies the software, so it is easy to identify what you have raised.

On the way back from a week on the Isle of Wight a class of local fourth-years called in to see the *Mary Rose* in Portsmouth. They were impressed by the size and shape of what was left of the old ship. They were also very cold as the ship's home is kept at a temperature of 5°C and 95 per cent humidity! Prior to their visit they had done a great deal of research about life in Henry VIII's time – especially his role in improving the navy. Using the software was a perfect way to follow up the visit. It was amazing how many of the finds the children could remember when they brought them to the surface.

The opportunity for the children to engage in all sorts of writing activities can easily be grasped, and never ignore the chance to do the writing on the computer.

The following is a good example of the way children can adopt the roles of the people of the time. Written by Samantha Bresnahan, it is her account of the diary of a sailor on July 19, 1545.

'This was my tenth time aboard the *Mary Rose* and I was looking forward to it because I was determined to give battle against the French fleet. I kissed my wife, Polly, goodbye and went aboard. Southsea Castle was soon left behind and King Henry VIII himself was watching. I felt very proud to be representing England in front of the King. The French had already started firing at the flower and we were in our positions. Suddenly the boat started getting a bit shaky and it was tipping from side to side. I knew we had 400 extra men on board but this was ridiculous. Suddenly water started gushing through the gunports. There were screams and shouts as we felt the boat tipping on one side. All the cannons were rolling over and squashing and trapping the men. This happened to one of my mates and I decided to jump over the side and get away if I could.'

Samantha also wrote the diary of this particular sailor's wife – Polly, July 21, 1545. 'It was early



The *Mary Rose* as she sailed in days gone by

morning and I was hoping for the return of my husband from the battle against the French. A letter was pushed under the door during the night. I had never had a letter before and I opened it with trembling fingers. It said: "Dear Polly, Two days ago the *Mary Rose* sank and your husband is missing. We think he is all right because he was seen swimming away from the ship as it went down. We don't know where he is. Yours, Jack, his mate."

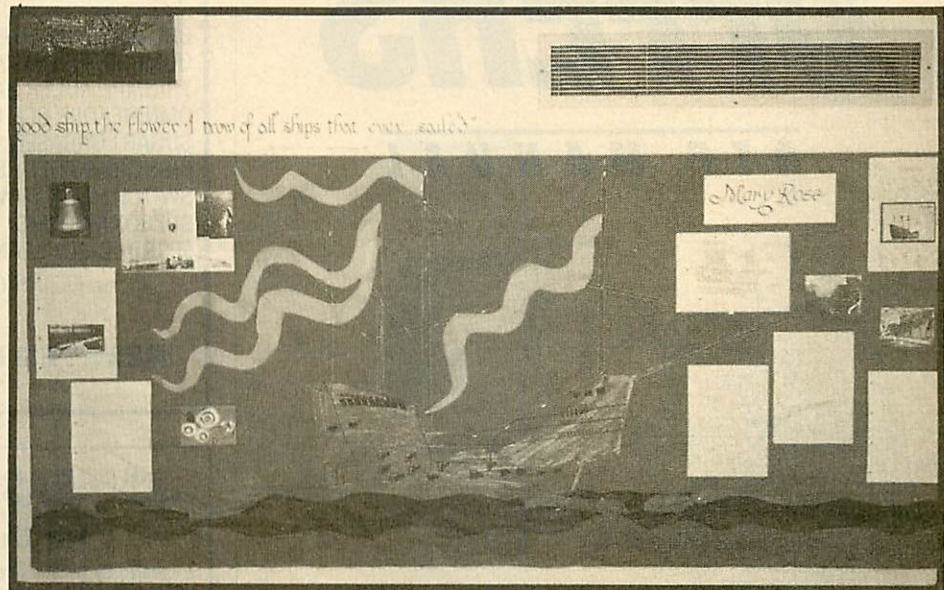
My friends came round to comfort me when they knew but there were so many other men missing and drowned. I couldn't get over it. It was a great shock. I was crying all the time and kept hugging his belongings. It was a very sad time.'

As well as these 'fictional' exercises, the children can get involved in writing factual reports of their diving activities. It shows how well they get into character and learn their roles before they write up their first attempts at diving. The following piece by Claire Black, illustrates my point:

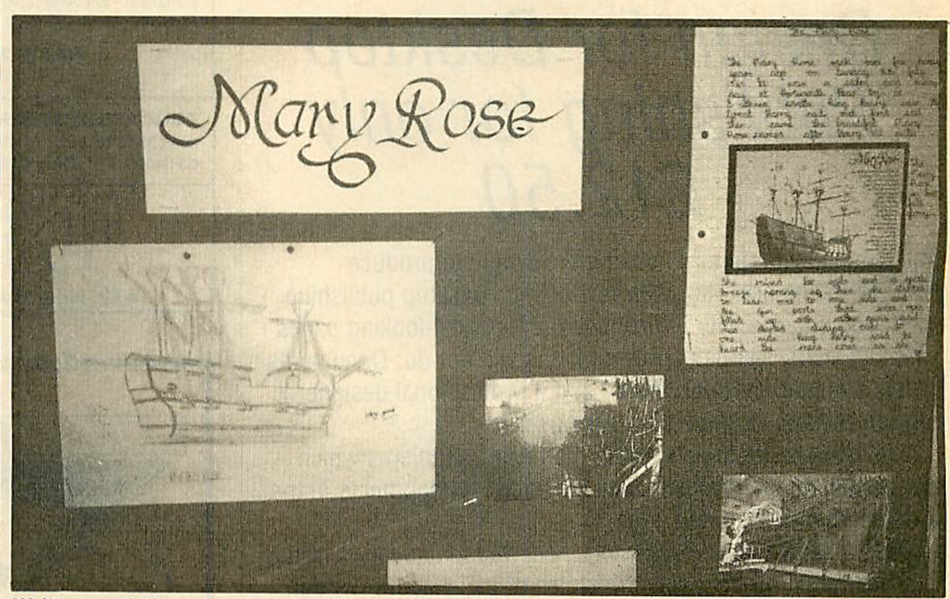
'When we drove into Portsmouth I got more and more excited about my first ever dive. In no time we were on the boat and heading towards the dive site. We were going down to search the remains of the *Mary Rose* on the seabed in the Solent. Soon I was in the water paddling away. It was dark and very cold – it felt great though. I was diving with a friend called Mary who was a well experienced diver, unlike me. We split up and went in different directions. I wasn't as confident without her but I soon got used to it. At the bottom I was removing lots of mud with the airline, but underneath there seemed to be just more and more mud and rocks. I had six minutes left on my air gauge but I still hadn't found anything. I went to find Mary and see if she had found anything. I caught her removing some mud and underneath there was a leather shoe. Very carefully we raised the shoe and took it to the surface. I still wanted to find something and as I had done well in the morning they let me dive again. I removed lots more mud but still no luck. I was getting a bit cold and fed up about not finding anything, when I came across something. It looked like a waist jacket. I was so happy as I took it to the surface.

Not all the children could come to terms with the fact that everyone would actually enjoy diving into the freezing sea looking for pieces of an old boat! They were quite happy to have a go in the classroom – but in real water? Some of them decided to simulate a real dive in the school swimming pool. As this is only six feet deep it was quite difficult. It also included wearing close fitting clothes, goggles with the glass covered over (it is dark down there) and being partially or totally immersed for over half an hour. I also had to turn off the pool's heating system for a day to get the water temperature down! They all hated it! It gave rise to the following piece of writing – on *Wordwise* – the next time they had to imagine they were diving.

'I'm not sure why I do it. Every moment I spend under water I am terrified. I hate the gloom. I hate the cold. And most of all I am frightened of being trapped under the water. Yet I cannot resist it. I get up in the morning feeling very jittery and by the time I am dressed to dive I find myself actually trembling. But down I go, convinced that one day I shall make the most wonderful discovery, the one that will explain why I do it. I'm sure it's there, just under the mud. Perhaps today . . .'



The package can be used as a basis for many associated projects



Written, artistic and research skills can be used

You can build all sorts of other class activities around the Tudor project. As well as the usual cloze tests and creative writing, the children tried to imagine the launching ceremony of the *Mary Rose*. Using the amazing *Compose* they tried very successfully to 'write' some music that sounded Tudor. *Compose* consists of groups of musical phrases represented by pictures – nine on each screen. It is then possible to combine these pictures to make simple tunes. The children soon recognise the sounds that each picture represents and can make tunes at great speed.

If you have a mouse and the AMX *Art* package or something similar, you can encourage pupils to draw the submerged boat, or a cannon on deck. There really is no end to what children can do as the result of a good simulation pack like *Mary Rose*. I just hope you all enjoy diving as much as we did!

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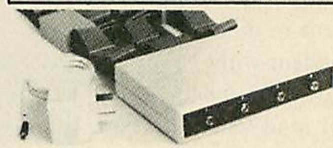


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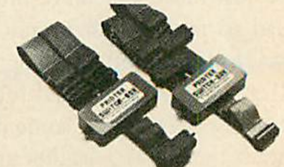


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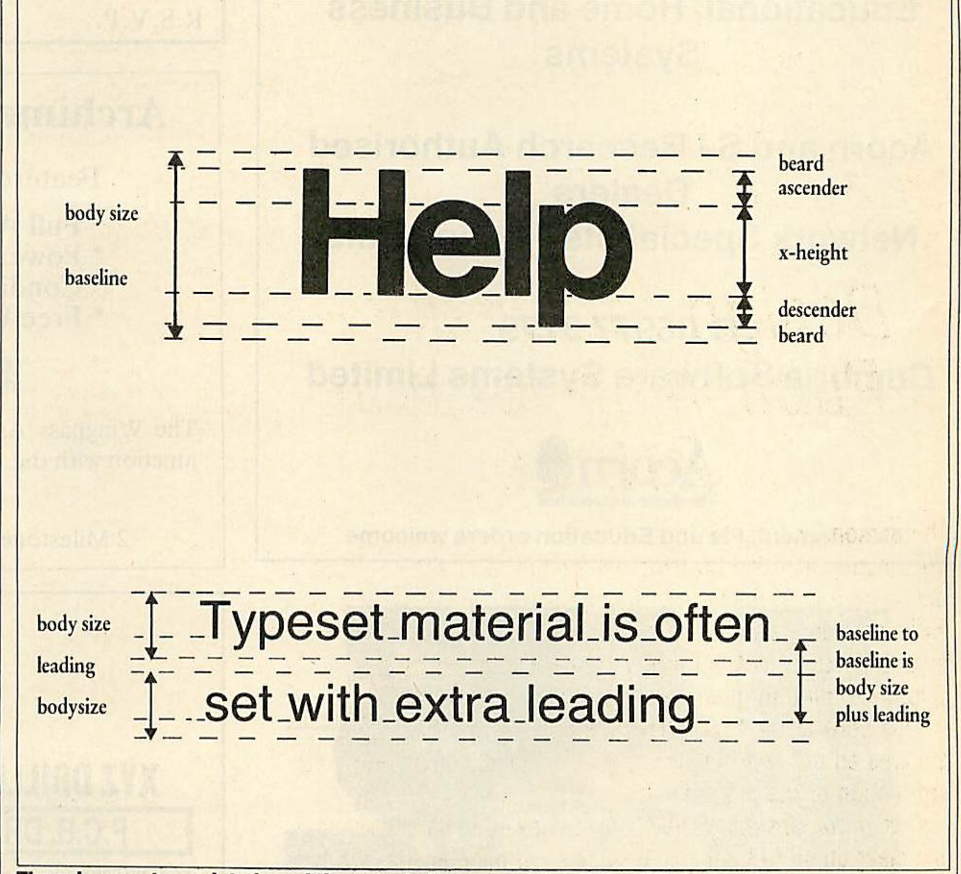
The printing industry's terminology is based on the olden days when molten lead was poured into moulds. Tony Quinn elaborates

To understand type you've got to go back to the days of molten lead being poured into moulds. That was when the technology was invented, and the terms and ideas that govern the basics today are still dictated by those conditions.

This delving into the past means talking about feet and inches, as anyone who owns even the latest laser printer will know. The basics are simple: letter sizes are measured in points, and there are 72 points in an inch. Column widths are measured in picas, and there are six picas to an inch (ie, each is 12 points).

The main text type in newspapers is usually about eight-point (8pt) going up to 48pt for the biggest headline on the front page of *The Guardian* and 120pt on the front pages of the tabloids. But how do you measure this? Well, first of all you need a special ruler. It's called a typescale, and these are usually marked off in at least 5, 6, 10, and 12pt units. There are 10 and 12pt scales marked down the edge of this page.

Headlines are easiest to deal with. Figure 1 shows a word with all the relevant bits marked. Note that the size is equal to the ascender plus the 'x-height', plus the descender, plus a little bit called the 'beard' – it's this that stops descenders touching ascenders when one line of type is on top of another. This gives the 'body' size of the type, the body being the chunk of metal on which the character sat in the old days. So if you put a typescale up against a headline and find it looks just less than 48pt, then it probably is 48pt.



There is more to a printed word than meets the eye – note all the different parts

Some typefaces look larger than others, even though they have the same body size, especially if one has a larger x-height. When it comes to the main text type, gauging the size from printed text is made more difficult by the introduction of 'leading'. The term comes from the technique of inserting extra thin strips of lead between the lines of type to make text more readable. *Acorn User* is set in a 10pt body type with 2pt leading (known as 10 on 12pt). So if you put a typescale against a column of this page and measure the distance between two baselines, it will be 12pt. Working out that there is 2pt leading is very difficult, and is something you will only learn by experience. Most publications use some leading, from half a point to 2pt. Generally, the wider the column the bigger the leading.

So if your DTP software is capable of using leading, do sample text prints, of at least 10 lines, to see the difference it makes. It may mean fewer words per column, but they will be easier to read – it's just the same as the difference between wordprocessing in mode 0 (no leading) and mode 3 (same-size characters but spaced out more).

Much BBC software isn't capable of dealing with the finer details of typography and usually works in inches or centimetres, so it's a matter of working out your own conventions for converting to the points measure. You should use leading wherever possible – it really helps dot-matrix setting. And of course if you're having proper typesetting done from wordprocessed discs, the printer should be able to advise. Note that a lot of books state their typeface and size on the copyright page.

Where typography can be applied easier is in headline shapes. If you have a lot of heads on a page, the size, number of lines, and width should be varied to reflect the importance of stories.

Take *AU's* news pages, for example: we use 60pt for the biggest story on the first page, 48pt is the biggest on other pages, and then 42, 36, 24 and 18pt. As for shapes, the length of lines is important. For a two-line head the best shape is long then short; for a three-liner, long, short, long.

Heads can look strange sometimes if there are no ascenders or descenders in a line. If this is the case, the space between them should be reduced: it depends on the exact words you want to use.

In December's column we'll look at improving a page design.





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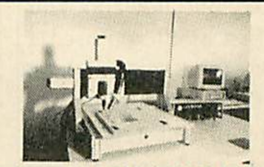
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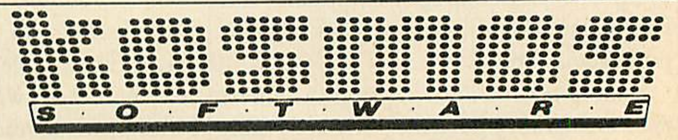
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INTERLUDE

MAKING MUSIC

For those of you who enjoy making music on the Beeb, this new regular page from Ian Waugh will keep you up to date on the latest from the music world

Welcome to our very first regular *Acorn User* Music column. It'll run bi-monthly and cover all aspects of music and the BBC micro, perhaps rubbing noses with the Arc a little later on.

How better to begin than with a quick look at the music potential of the BBC. There are already an enormous number of programs using the Beeb's internal sound chip and they still keep coming.

If you want to write tunes, then the Island Logic Music System is one of the most popular and comprehensive packages around. It is now available at a special price of £20. An additional five discs of ready-made tunes are also available at £4 each.

There are lots of worthwhile educational programs on the market which cover everything from music theory and note recognition, to composition and the exploration of sound. Many are quite suited to individual use while others are designed to promote classroom activities – Chris Drage and Nick Evans covered many in their August 1987 column.

If you're seriously interested in MIDI there is U-Music's UMI-4M at £322 (see Martin Russ's review in our June issue) and lots of packages from EMR. Owners of the Hybrid Music System will no doubt be aware that the company's MIDI interface, the Music 2000, is now available. This undoubtedly makes the Hybrid Music System one of the most powerful composition systems available for any micro.

If you are one of the few remaining people with a Peartree Music 87, get in touch with Hybrid. It has put together a rescue package enabling you to upgrade to a Music 5000. If you have an old Music 500 and have relegated it to the cupboard, then dig it out, upgrade to a 5000 (again via Hybrid) and rejoin the music revolution.

If you read my article on the Hybrid Music System in the June Music issue, you'll know how highly I regard the work of Amplinex, the Ample user group. That particular article resulted in a flood of new membership applications. However, I'm afraid I neglected to add that you must supply a formatted disc, return postage and a label – sorry, Amplinex.



Take the hardware or software approach

Amplinex has been running for a year now, and its latest disc is likely to contain a machine-code monitor to study the workings of Ample as the music plays, plus a collection of Ample utilities including a MIDI joystick and an auto-save system. Members will also receive a disc containing 18 tunes programmed by Amplinex members. If you haven't joined yet, it is a good idea – send a disc and fiver.

You can also download Music 500 and Music 5000 from Music City, which is accessible through Micronet. If you haven't gone Hybrid or MIDI yet, but still enjoy making music on the Beeb, then don't forget Music City also has lots of tunes which use the internal sound chip.

Finally, if there are any aspects of music you'd like to see covered in this column, please let us know. Likewise, if you have any hints or tips about making music on the Beeb – so we can share them with other readers and musicians. Write to Interlude, *Acorn User*, Redwood Publishing, 20-26 Brunswick Place, London, N1 6DJ.

NOTES

● Electro Music Research is working closely with Acorn to develop music software for the Archimedes. If you visited this year's British Music Fair in July, you will have seen EMR's Mike Beecher running through his famous music demonstrations. Details of EMR's Arc products were reported in our June issue.

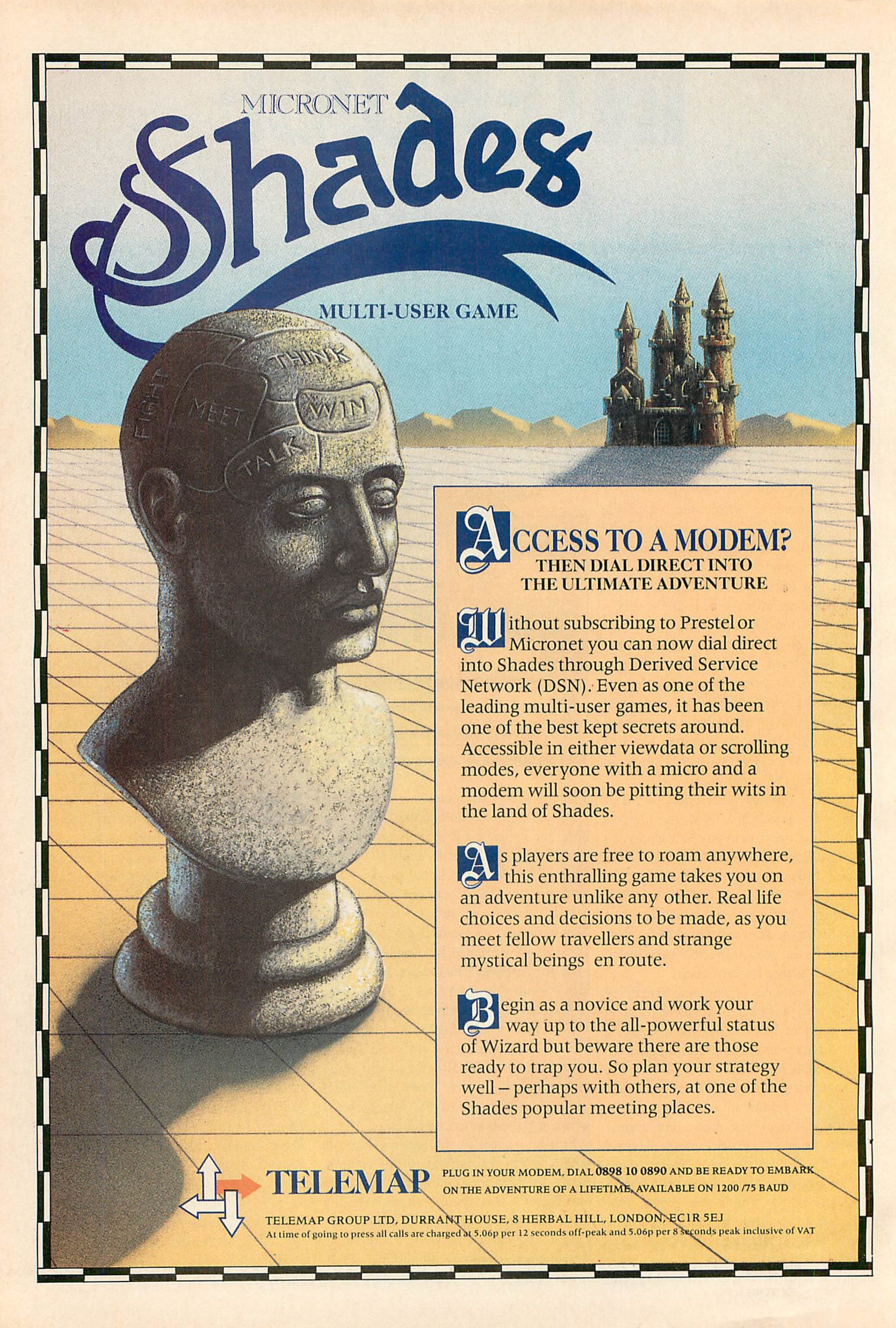
New for the BBC micro is a Roland MT-32 Editor and Librarian program (£39.95) which needs EMR's MIDI Interface (£79.90).

● Amplinex now has an agreement with the Mechanical Copyright Protection Society allowing it to publish music which is not members' own work. Music City and Hybrid already have a similar agreement.

● A new book about MIDI has just been published. It's the *Practical MIDI Handbook* written by R A Penfold. It concentrates on explaining the basics, although it includes quite a bit of technical data, too. It is published by PC Publishing at £5.95.

● *Sounds Useful* – (£20) from Medusa – was designed to promote musical exploration and activities in primary schools. It is not new but it's only now being promoted to a wider audience. The package includes activity cards and an audio cassette made by pupils at a Lincolnshire school, and offers teachers a ready source of new ideas and music projects. □

Amplinex, 26 Arbor Lane, Winnersh, Berks, RG11 5JD. EMR, 14 Mount Close, Wickford, Essex, SS11 8HG. Tel: (0702) 335747. MEDUSA (Microelectronics Education Development Unit), Biship Grosseteste College, Newport, Lincoln, LN1 3DY. Tel: (0522) 44713. Music City, 138 Prescot Road, Aughton, Ormskirk, Lancs, L39 4SW. PC Publishing, 22 Clifton Road, London, N3 2AR. Tel: 01-346 0627. System Applied Technology Ltd, Fifth Floor, Sheaf House, Sheaf Street, Sheffield, S1 2BP. Tel: (0742) 768682. U-Music, 17 Parkfields, London, SW15 6NH. Tel 01-788 3729. Micronet, Durrant House, 8 Herbal Hill, London EC1R 5EJ. Tel: 01-278 3143.



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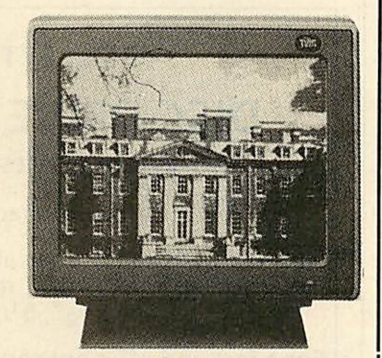
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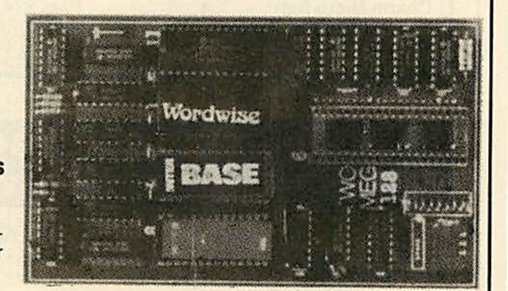
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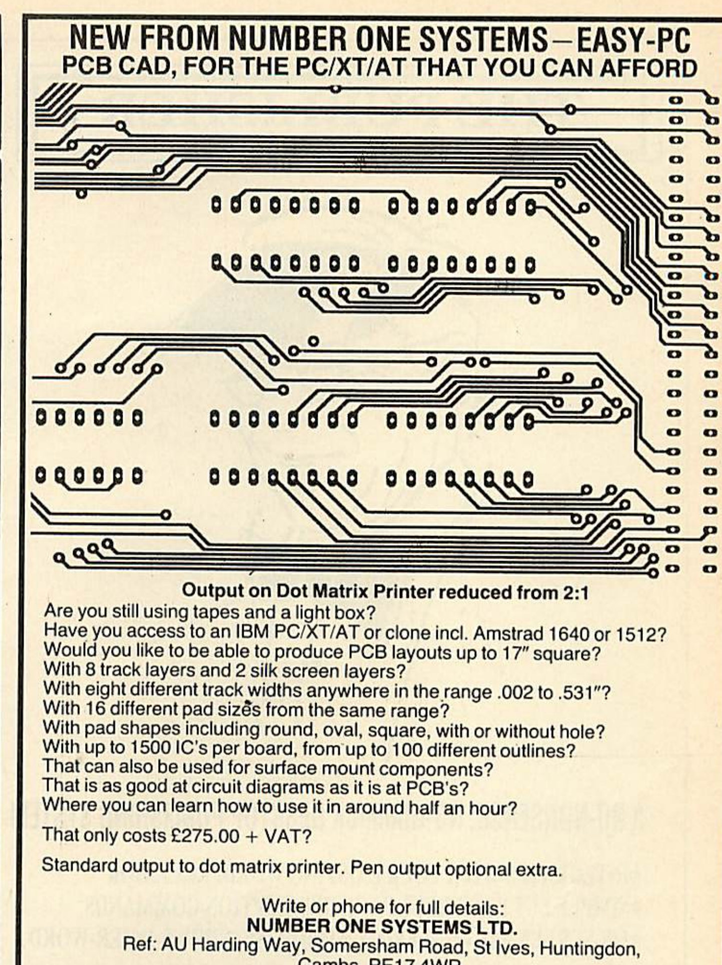
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LETTERS

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ARCHIMEDES OVERKILL

Sir, As a BBC B owner and a longstanding reader of *Acorn User*, I have always awaited each month's issue with some impatience, eager to devour its interesting contents. However, over the past few months I have found that as I do not possess an Archimedes (and quite frankly, I am never likely to), there is less and less in the magazine for me.

I regret throwing brickbats at what has always been one of my favourite magazines, but the September issue was the last straw. I would suggest that you evaluate it and see what proportion of the contents was devoted to the Arc.

D Gough
Wolverhampton

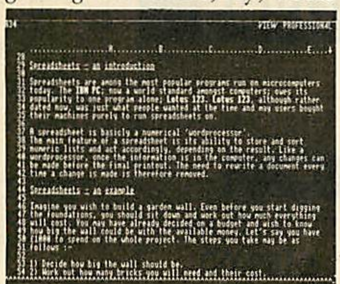
The March and September issues did indeed contain more than usual on the Archimedes; in a sense they were special issues, devoted predominantly to the Arc, and they were flagged as such on the cover.

If you take a look at, say the June issue, you will see a more normal degree of Arc coverage.

WHICH WAY TO SUPER VIEW?

Sir, S Cusack's plea for more attention to the Electron in *Acorn User* is timely. But supporting the Electron does not merely consist of publishing articles on specific Electron-related developments, but also of taking note of Electron compatibility in, for instance, reviews of software. Could advertisers be reminded that Electron owners read the magazine, and a note of Electron compatibility might pay off?

Perhaps you could also help the Electron fraternity with the answer to a problem. Where does the owner with *View*, Plus 3 and an Electron go next? I had always assumed that upgrading to a Master, say, would



View Professional works on Elk

give a more powerful version of *View*, but it appears not. There would be an obvious advantage in a wordprocessor compatible with existing *View* files, but giving enchanced facilities. Is it possible that such a 'super-*View*, might be developed?

The Revd W Strange
Aberystwyth

Take a look at *View Professional*, reviewed in last October's *Acorn User*; it's similar to *Pipedream*, reviewed in this issue, and has a *View*-import utility. This should work on an Electron, if you can install the two ROMs required in a cartridge or on a ROM board.

If you do decide to upgrade to a Master, you'll find that the amount of memory free for wordprocessing is greater.

ARC IS NO LAME DUCK

Sir, I read with interest William Charles' letter regarding the Archimedes in your September issue. Having just done my A levels, and hoping to do a Computer Science degree, I too purchased an Archimedes 310.

I agree that there are a few drawbacks with the current operating system and I hope these will be rectified in the next version, and the problem he mentions with the windows is indeed a valid complaint. There are bugs in the current version of the operating system (over 150 at the last count) but most of them are pretty obscure and can only be expected in what adds up to 512k of code. But one only has to look in the Programmer's Reference Manual to see the very extensive facilities that are implemented at operating system level – for example, the heap manager, the relocatable modules, the facilities for running temporary (transient) programs without disturbing the application's memory and workspace – I could go on, but I think the point has been made. The current operating system is perfectly adequate for a non-multi-tasking OS.

Mr Charles also says that Archimedes software is too expensive. In many cases this is true, and some companies are using the Archimedes just as a BBC micro – a terrific waste of power – and charging outrageous prices for their programs. However, this is not the case with the software that he mentions. Professional quality programming tools are not cheap. Many ex-BBC owners (I had a BBC for years and then a PC) seem reluctant to pay more for higher quality software – for BBC style prices, you only get BBC quality. In many respects, the software he mentions outclasses that available on the PC, but Acorn aren't charging Microsoft style prices are they?

Acorn didn't include the Programmer's Reference Manual with the computer because it would have put the price up – it couldn't really have been free. I do think that Acorn is taking unfair advantage of its position with regards to hard discs – they make the interface podule and won't sell it separately and so can ask what they like.

The quality of the compilers and the documentation (in the PRM) is a credit to both Acorn and the machine. Therefore, as programmers, it is up to us to make sure that the machine is not 'lame': we have been given every opportunity to do so.

Karl Strickland
Liverpool

PRINTING ERROR

Sir, Has anyone felt the same degree of frustration as I when typing Basic commands like PRINT in lower case by mistake? Have any of your readers produced a utility program to make commands like these case-insensitive?

J Ault
Staffs

EASY IBM CLONE

Sir, I own a BBC Master with 40/80-track disc drive and an AMX mouse. I would like to make it completely IBM-compatible. At the same time I would like to be able to switch back to the BBC Master.

I have heard of the Watford 80186 co-processor, but I have no knowledge of it and do not really know what exactly the package does. Could you please advise me?

Kamal Lakhinai
Dubai

It is possible to upgrade your Master 128 to a certain degree of compatibility with the IBM PC. It simply means the addition of an 80186 co-processor. The Watford co-processor that you mention is an upgrade for Model B owners and contains both the 512 board plus an interface box to put it in. You need only buy the 80186 processor board.

As regards compatibility, a large proportion of PC software will work. Problems normally occur if the software concerned does things that are machine specific, such as accessing the disc controller directly. We have in the past, published lists of compatible software including '512 Roundup' in the September 1988 issue.

SUPPORT YOUR MASTER 512

Sir, I have been using a BBC Master 512 for over a year, and have spent a great deal of time and money collecting scraps of information to supplement the totally inadequate manual supplied by Acorn.

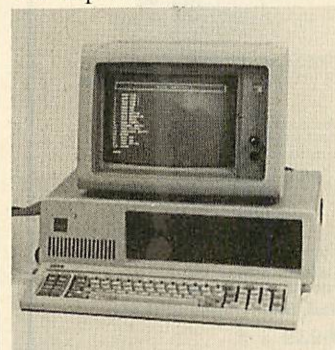
Acorn User has supplied just two pages in this period, plus the two-page spread in the September 1988 issue. But does no-one look at the magazine as a whole, before it is published.

On page 34, the 512 co-processor is advertised for £99, as a result of Acorn halving the price a month ago. On page 13 is a news item announcing a program which gives BBC owners the same choice of keys, when they use it, as the owner of a Master. On page 122 is a review of a file transfer program which costs nearly half the price of the complete 80186 co-processor (£46) and appears to require only two or three stages to convert files between BBC and IBM PC formats. This process is so easy with the 80186 co-processor, but no-one ever mentions it (CP/M formats are included too!) Finally, DABS Press has announced in its new catalogue that two new books – User's Reference and Technical Reference manuals for the Master 512 – are expected to be published in a few weeks' time.

All this means that the owner of a Master with twin-drives and 512 co-processor can transfer files between many PC and BBC formats, and use a large number of the PC programs, both commercial and public domain. The total cost of the co-processor is now around £100 compared to £400 when it was introduced. The BBC owner can do the same, with the addition of a co-pro adapter (such as those from Watford or Acorn) plus the key converter mentioned above.

There must be many, like myself, who cannot bear the thought of being without their Master (or BBC), with its BBC Basic and many familiar programs on ROM and disc; yet who would not like to experiment with the new things being offered on the PC? The 80186 co-processor allows just this, with everything together in one computer.

Software for the PC is often cheaper and faster than its BBC equivalent, a perfect example of which is Zorland C. The greatest disadvantage until now has been the almost complete lack of support from all the magazines and, of course, Acorn. Hopefully the situation will improve.



Master 512: beats PC clones

I am not running a business, but have some applications for running business software in helping a voluntary society. *dBASEIII* and other programs of its generation are sophisticated enough for my purposes and they are much cheaper than the latest commercial software. I would like to recommend other readers to consider buying the 80186 co-processor, before they trade in their BBCs for one of the latest PCs.

Evelyn Kenward
Farnborough

PRINTOUT PROBLEMS

Sir, I use GW Basic on a Master 512, and have been having trouble getting a print-out. Do you know of any interpreter which will allow print-out to be produced? Can you or a reader help, as documentation is scarce?

W Edwards
Sheffield

GW Basic uses the LPRINT command, rather than the familiar VDU 2 of BBC Basic, to send text to the printer. To produce hardcopy, you replace PRINT with LPRINT

MONEY TALK

Sir, Some months ago you printed my letter showing a way of converting the '£' signs in Wordwise Plus so that my printer would do as it was told. Now I have to admit that *Wordwise Plus* will do it perfectly well all by itself. It has taken me three years to work out how to actually use the ‹f1› DP ‹f2› code!

If you run the routine below (with the printer switched on), you can see which ASCII code causes your printer to produce a '£' sign. You may even be able to glean it from the manual.

```
10 VDU 2
20 FOR I=32 TO 126 STEP 2
30 PRINT I;" = ";CHR$(I),I+1;" = ";CHR$(I+1)
40 NEXT I
50 VDU 3
```

All you have to do is type ‹f1› DPnn ‹f2› (where 'nn' is the ASCII code you have just discovered) alongside all the other codes at the beginning of your text. Any '£' signs that you put in your text while editing are then printed as such, even though they may appear as something quite different in preview mode.

By the way can anyone tell me how to use the RPS codes greater than 4, or where to find out about them?

D McLeod
Andover Down

ACORN USER ADVERTISEMENT PAGES - OCTOBER 1988

FREE ADS

Archimedes penpal wanted to swap hints, ideas, aged 14-17. Patrick Shuker, 163 Hagley Road, Halesowen, West Midlands, B63 4JN.
UserDump ROM, unused tape, connector, disc users (1-4), £15 (will split). Chris Garnett, 14 Lavender Road, King's Lynn, Norfolk.
Electron Plus 1, Joystick, tape recorder, leads, lots of original software (63 cassettes). In very good condition. Offers, Tel: (0727) 40696.
BBC B, 1.2, Aries B12/B32 single Watford HO/80T, *InterWord,-Sheet, - Chart.* Philips BM7502; Digimouse; KXP810. Tapes, books, much software. Tel: (0347) 4529 (York).
BBC B, DDFS, single drive, monitor. Sideways RAM-ROM, spare drive, printer, Torch Z80 (faulty), software, £400. Tel: 021-329 2305.
Electron with Plus-1 interface, dual joysticks, tape recorder lead and (£50) tapes. Boxed as new, £80. Tel: Philip 01-845 2300, ext 423.
BBC B Acorn DFS twin double sided 40/80T drives, Music 500, miscellaneous extras, £350. Tel: (0532) 505162 (eves).
Electron data recorder, Plus 1, ROMbox, *View, ViewSheet,* RS423, 60 games, 50 mags, joysticks, manuals, books, expansion 2.0, £320 ono. Tel: Robert (0708) 760286.
BBC Micro Issue 7, 256K SWR, trackerball, books, magazines, software, will split. Tel: (0384) 288363.
Cambridge Co-processor 32016 IM610MHz PAN0513, with £2000 software including GCAL, BCPL, reduce GKS-UK, Matrix 3, Vuwriter. Only £700. Tel: (0234) 750770.
Electron games, *Acorn User* and *Educational Computing* back issues, '85/'86. For details send SAE to: Carl Bateman, 86 First Avenue, Koisgrove, Stoke-on-Trent, ST7 1DW.
Games: cassette/disc including *Shark, Saigon, Barbarian, Code Name, Droid, Repton 3,* Watford DDDFS, and many more. Tel: Paul (0203) 410047.
Old magazines 1981 to 1988, including *Acorn User* plus many others. SAE to: P Wild, 109 Lampits Hill, Corringham, Essex, SS17 9AB.
Solidisk 4meg 256 board £70. Acorn ISO Pascal and Prolog, £35 each, Minerva's *System Delta* £50, or £100 the three. Tel: 031-667 4180 (eves).
BBC B+ Issue 7 (immaculate), 1770DFS, DSDD 40/80T, +PSU disc drive, over £50 software, discs, leads, £370 ono. Superb condition. Tel: (07456) 2698.
Solidisk 256k 4MEG board +32k manager ROM plus software, £80. *InterWord* ROM, £35, both for £100. Tel: 041-641 1200.
BBC B with ready to use disc, wordprocessing system, free modem, games, disc storage, plynth, £450 ono. Tel: 01-997 0930.
Master 128, colour monitor, 40/80T disc drive, manual, £585. Taxan KP310 printer, £150. Fishertechnik 30554 computing kit, £100. Tel: (0837) 840718.
Archimedes 310 colour, *Zarch* PC emulator. *Word Perfect,* database, SC4. Programmers reference guide. 30+ discs. Offers over £900. Tel: (0775) 6000.
Master 512, DOS+, Gem mouse, colour monitor. Dual 40/80T disc drives, printer. Many ROMs, games and manuals, £900 ono. Tel: (0494) 675670.
Morley teletext support and ATS ROMs, manuals, utility disc, as new, £12. Four blank 16k EPROMS, as new, £10. Tel: (0379) 650186.
Micro User magazines, June 1984 to January 1986, and February 1987, to March 1988, £15 the lot. Tel: Bristol 636539.
Electron 64k Plus 3, Plus 1, *View, ViewSheet,* Slogger joystick Interface, TZP3, ROMs, ROM cartridges, games, tapes, discs, £200. Tel: 01-572 3433.
Watford Electronics Solderless ROM-board Speech Synthesiser, DABS Press Master emulation ROM. Tel: Tony 01-517 2587.
BBC B with DFS, SSD disc drive, green screen monitor, *View 2.1, Wordwise,* other software, manuals, etc, £350 ono. Tel: (06284) 4923 (eves).
Electron owners! Advanced Plus 4, £40. T2P4 ROM(V.2), £10. Slogger ROMbox, £15. Elkman ROM, £5. Voltmace joystick, £5. Tel: (0255) 220167.
Electron Plus 1, Plus 3, *View,* Pascal, Forth, second processor kit. Chips, games, database, £210 with manuals. Tel: (0462) 730621 (eves).
Acorn User, most issues from 1983 onwards. Offers? 3 Southdown Close, Beer, Devon, EX12 3AN.
Acorn Electron with Plus 1 Interface. Lots of software, manual, magazines, bargain at £45. Tel: (06333) 66287.
BBC B PC-case, printer, twin drives, ATPL, Torch-Z80, ROMs, games, books, magazines, EPROM programmer, eraser, ideal for small business, £800. Tel: (0742) 647184.
Electron 64k Plus 1, Plus 3, user port Interface, *View, ViewSheet,* Pascal, discs and books, £250 ono. Tel: 051-737 1224.
Complete Master system including Plotter and AMX MKIII, Mouse + software, colour monitor, & Electron Plus 1. Boxed, guaranteed, £900. Tel: (0602) 817935 (eves).
Archimedes 310 basic DOS 1.2, £815. Will deliver reasonable distance. Tel: Portsmouth (0705) 733837.
ARFON speech synthesizer for BBC. Never used, £12. Tel: (0953) 718420.
BBC B OS 1.2, computer cassette recorder, Watford EPROM programmer, over £100 worth software, £300 ono. Tel: (0483) 573280.
Electron Turbo 64k, Plus 1, Plus 3, *View, ViewSheet,* database, ADFS/DFS, books, mags, £195. Pascal, £30, 5.25-in disc, £50. Tel: (0895) 636193.
Printer Seikosha GP250X, little used, condition as new. Serial/parallel interface, £125. Tel: S Moorse (0223) 834185 (eves).
Electron with manuals, some games, Mini Office, cassette recorder and desk, 26" wide, good condition, £80. Tel: Chalfont St Giles, 2216.
Epson LQ800 24-pin letter quality printer. Hardly used, £375 ono. Tel: (0323) 845762 (Answerphone).
BBC B DFS, ADFS, 40/80T, D/S disc drive, 6502 S/P, 32k sideways RAM, 60+ discs, all manuals, £420. Tel: Alex 01-352 8432.
Disc drive, Opus 5401; 40 tracks; unwanted gift, unused; still in original box, £50. Tel: (0443) 202735.
Z80 second processor, £160. Z80 turbo Pascal, £22. Disc drives 40/80T powered, £130. Software/hardware books/magazines, list available. Tel: 07618-521.
BBC 1.20, Microvitec monitor, 40T Cumana disc drive, joystics, modem, ROM board, mouse, ROMs, games, books, 50 magazines, tape deck, £1,000. Tel: (04574) 65210.
Electron sound enhancer, data recorder, leads, books mags, joystick, games, £350. Dust cover, £200. Tel: 01-842 0180.
BBC model B, including joysticks, games and instruction manual, £160. Tel: (0442) 54683.
Master turbo, £380. 28 megabyte winchester (Viglen), £370. 32016-10MHz, Cambridge co-processor, £800 (includes GCAL). Dual 800k drive, £150. Tel: (0273) 471081 after 3pm.
BBC B as new. Boxed BBC data recorder, joysticks, loadsa software, hardly used, only £195. Tel: 01-550 0067.
Electron Plus-1, turbo board, *View,* Pascal, AP4, 5.25-inch 40/80T drive, games on disc, tape, books, mags, £280. Tel: 062-082 2460 (eves).
BBC B colour monitor, printer, Challenger RAM drive, RAM/ROM board, speech, datacorder, desk, books, £500. Tel: 061-434 2746.
Viglen 40/80T double sided disc drive, £70. GXR for BBC B, £15. Tel: (0503) 72910.
ROMs Beebug Sleuth, toolkit, £12 each. Masterfile II, £10. *View* and *ViewSheet* manuals, mint, £5 each. Tel: (0785) 42294.
Master compact colour system. Plus *View* guide, printer lead, reference manuals, assembler books. Immaculate, £495 ono. Tel: Dave 029-673 8085.
BBC B issue 7, OS 1.2, 1770 ADFS, APTL board, £275 ono. Tel: 091-413 8988.
BBC B 800k 40/80T dual disc drives, DFS, 128k sideways RAM, *Wordwise,* manuals, books, discs, games, £500. Tel: Teesdale 40166.
Juki 6100 daisywheel printer, with cut sheet feeder. Virtually unused, boxed, perfect condition, £350 ono. Tel: (0799) 24224.
Modem telemode V2.3, BT approved, includes software and manuals. Bargain at £20. Tel: Dick (0302) 342858 (eves).
BBC B issue 7, ATPL board, twin 40T drives, Microvitec, cub monitor, joysticks, mouse, data recorder, *InterWord, Stop Press, Wordwise Plus,* books, £500. Tel: (0937) 844510.
Watford Le modem, viewdata/scrolling, multi-standard + bell. Autodial + auto-answer, includes ROM software, cables + manual. Bargain, £45 ono. Tel: (0202) 603104 (eves).
Acorn 32016 co-processor includes Pascal, C, Lisp, Fortran 256k, £900+ Any offers? Tel: Mike, 01-834 5019, all manuals included.
Commstar II +10 games for £30, or Commstar £24 + games, £1 each. Tel: (0254) 81 2177.
Modem prism 2000, Pace ROM, £25. Watford ROM (for Apollo), £15. Solidisk DFDC 2.2J DFS, £25. Leads, manuals, Tel: 058-283 3937.
BBC B Acorn DNFS, 40/80T drive 6502 2nd processor. Mono monitor, ATPL board, ROMs, printer, excellent condition, £650. Tel: 01-556 9037.
BBC B + Solidisk DDFS, £210. 40T/DS drive, £45. Solidisk 256k Shadow/SWR board, £55. Everything, £295. Tel: Andy (0483) 235106 (eves).
Acorn Electron, tape deck, disc drive, ROM (Plus 1), discs, tapes, £190 ono. Tel: Brighton 32142 (eves).
Acorn Modem, £60. Tandy DMP100 printer, £50. Intergrex 7 colour dot-matrix printer, £100. Green screen monitor, £15. Tel: (08446) 8197.
Master turbo, dual 40/80T, DS/DD powered drives, 2 cartridges, reference manuals, all for £650. Tel: Nick (0302) 342858 (eves).
Electron with Plus 1 BBC DFS *View, ViewStore* and other software, £99. Tel: (0223) 63545.
Electron 64k Plus 3 ROMbox+ Slogger programable, joystick, *View ViewSheet,* AP2 T2P3, books, games, magazines, £225. Tel: 01-804 4986 (eves).
Wanted *InterWord,* also want disc drive 40/80T, preferably Cumana, with PSU. Tel: Garry (0482) 794859.
Wanted Electron Plus 3 with manual. Tel: (0993) 772077 (eves).
Wanted, help with the Music 500, Ample Nucleus ROM, Ample albums. Tel: David (0742) 690303 (eves).
Wanted EMR Midi Interface. Tel: (0203) 416653.
Wanted music 500 and software. Tel: (0428) 713822.
Issues of *Acorn User* required Nov 1986, Dec 1986, Feb 1987, to complete set. Can anybody help? Tel: J Ault, 021-553 4791.

FREE PERSONAL AD SERVICE

Fill in the form below to a maximum of 20 words (one in each box) and send it to *Acorn User* Free Ads, 20-26 Brunswick Place, London N1 6DJ. Please use capital letters, write clearly, and remember your name, address and telephone number. Without this full information, supplied on a separate sheet of paper, we regret we cannot carry your Free Ad. We cannot accept entries selling or swapping software. This is a service to readers – no companies please. One entry per form only. Free Ads are carried in the magazine as space permits, and any Free Ads not used within a month of receipt will be disposed of.

ACORN USER'S

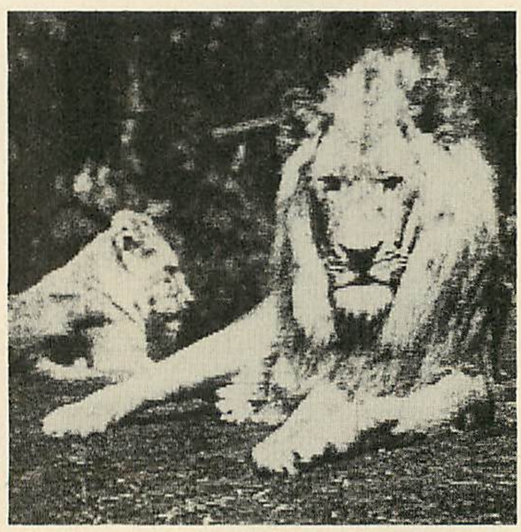
DIARY

Tall tales of the Tyne

Following on the heels of Tynesoft's unlikely lion-taming simulation and Superior's *Chess* theatre tie-in Orson Fact has been games-testing a few of the latest projects.

Top amongst them is the forthcoming *Starlight Express* from Hewson Consultants (a follow up to *Evening Star*), and Stryker's *Run For Your Wife*. There is also talk of links to the shows *Me and My Girl* (Mikie) and *42nd Street* (Paperboy).

Orson is less hopeful for the sports compilation featuring poodle-clipping, shopping in Waitrose, Arctic exploration and morris dancing.





Lion-taming from Tynesoft could spark poodle-clipping simulations

Bristol fashion

Well, wood you believe it! A Bristol computer firm has come up with an idea that could save thousands of trees from being needlessly cut down every year. And it hopes other companies will take a leaf from its book.

Each year, a forest the size of Wales is cut down for paper. So Tram Computers has begun to use recycled paper to print its computer manuals.

Tram may be the first computer company to use recycled paper but it hopes the rest of the industry will twig to its idea. As it says, 'From little acorns grow giant oaks.' Recycling material looks like being a growing trend.

Still Wizzing

When will it all end? It's been 10 months since we published David Lawton's *Wizalon* game, and there are still people phoning in, searching for the missing lines. Who would have thought that a game involving balloon bursting wizards and a sound track that lasts several thousand years without repeating would have been so popular?

For those still in the dark, here they are:

```
10550.randplay
10560 TAX
10570 LDA rndplaytbl%,X
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We're also getting enquiries about the 68000 co-processor exclusively previewed in October '87 – we showed it running *Gauntlet*, the Atari ST game of the moment. Now Orson has discovered there really is such a thing being developed!

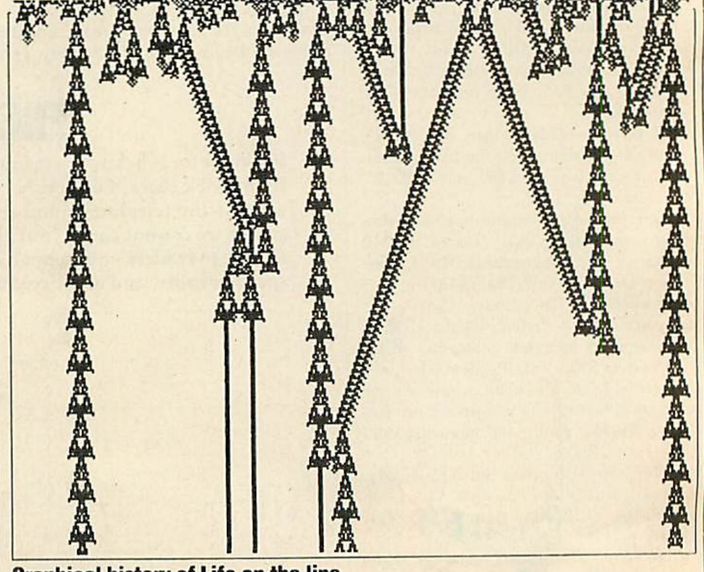
Design and fractal future

November's *Acorn User* has computer-aided design as flavour of the month. We will be reviewing Technomatic's new Master series *Technocad* package, along with *Autosketch* from Autodesk, both of which are for the Archimedes.

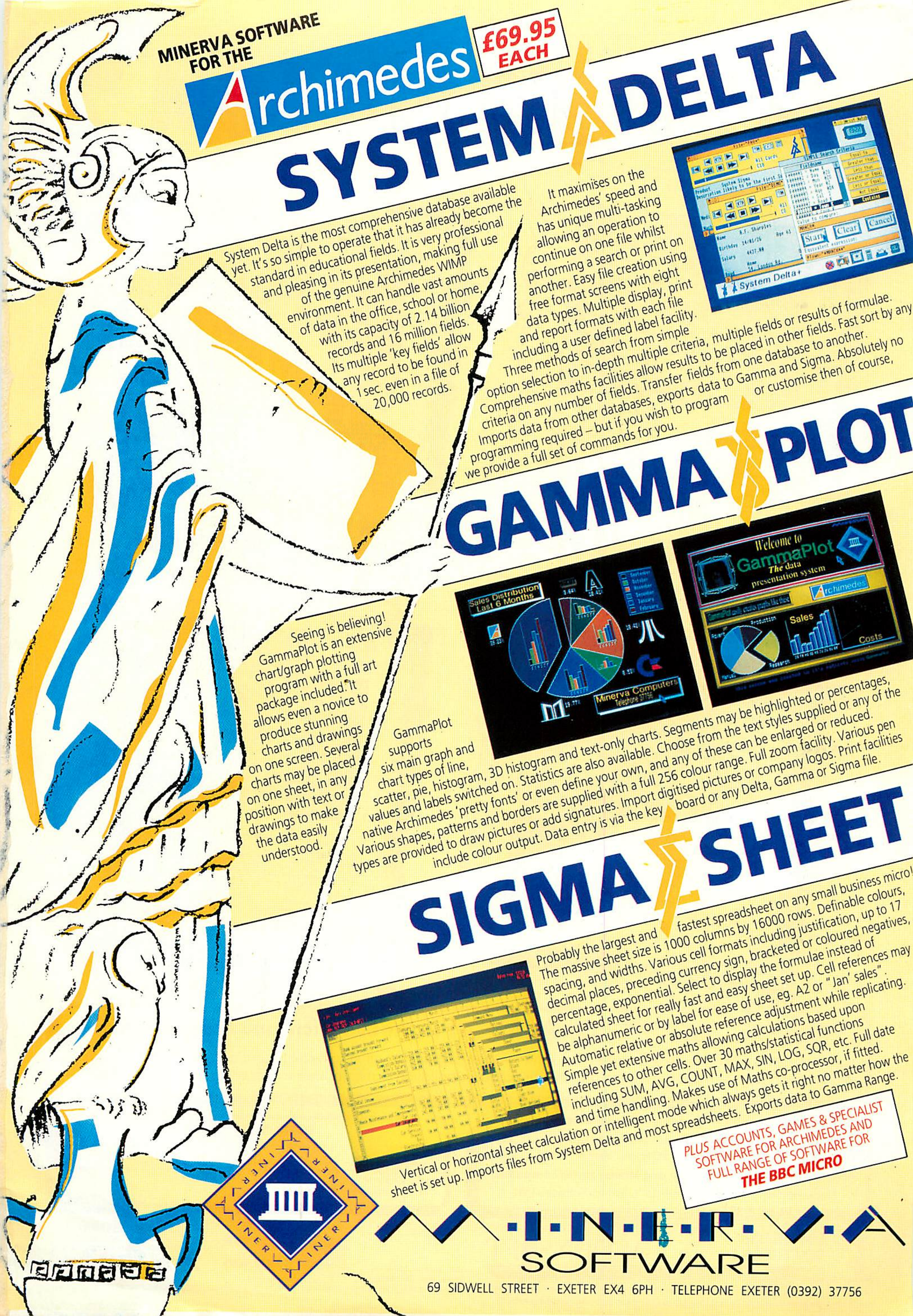
Many readers who filled in the Reader Survey in May suggested we carry a history of Acorn Computers. The second part of Carol Atack's story of Acorn's birth, growth, near-bankruptcy and regeneration continues next month. Also, Joe Telford shows you how to enlist your micro's help in compiling crosswords.

'Uniform' is the name of a proposed standard for datafiles on the Arc and BBC B micros. David Lawrence explains the structure of these files, and shows you how to interchange text between *First Word Plus*, *Pipedream* and *View*.

Susan Stepney, who wrote *Acorn User*'s first article on fractals back in 1983, returns to intrigue you with the possibility of Life in one dimension.



Graphical history of Life on the line


MINERVA SOFTWARE FOR THE
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System Delta is the most comprehensive database available yet. It's so simple to operate that it has already become the standard in educational fields. It is very professional and pleasing in its presentation, making full use of the genuine Archimedes WIMP environment. It can handle vast amounts of data in the office, school or home, with its capacity of 2.14 billion records and 16 million fields. Its multiple 'key fields' allow any record to be found in 1 sec. even in a file of 20,000 records.
It maximises on the Archimedes' speed and has unique multi-tasking allowing an operation to continue on one file whilst performing a search or print on another. Easy file creation using free format screens with eight data types. Multiple display, print and report formats with each file including a user defined label facility. Three methods of search from simple option selection to in-depth multiple criteria, multiple fields or results of formulae. Comprehensive maths facilities allow results to be placed in other fields. Fast sort by any criteria on any number of fields. Transfer fields from one database to another. Imports data from other databases, exports data to Gamma and Sigma. Absolutely no programming required – but if you wish to program or customise then of course, we provide a full set of commands for you.
System Delta+
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Minerva Computers
Welcome to GammaPlot The data presentation system
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Costs
Seeing is believing! GammaPlot is an extensive chart/graph plotting program with a full art package included. It allows even a novice to produce stunning charts and drawings on one screen. Several charts may be placed on one sheet, in any position with text or drawings to make the data easily understood.
GammaPlot supports six main graph and chart types of line, scatter, pie, histogram, 3D histogram and text-only charts. Segments may be highlighted or percentages, values and labels switched on. Statistics are also available. Choose from the text styles supplied or any of the native Archimedes 'pretty fonts' or even define your own, and any of these can be enlarged or reduced. Various shapes, patterns and borders are supplied with a full 256 colour range. Full zoom facility. Various pen types are provided to draw pictures or add signatures. Import digitised pictures or company logos. Print facilities include colour output. Data entry is via the keyboard or any Delta, Gamma or Sigma file.
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PRIZE COMPETITION

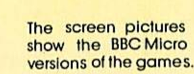
£100 is the first prize in our PLAY IT AGAIN SAM 3 competition, with prizes of computer games for 20 runners-up.
To enter the competition, you must answer one question about each of the four games in the compilation. To answer the questions you will need to have reached an advanced stage in each of the games.

Closing date: 28th February, 1989.



ACORNSOFT

Dept 3PS4, Regent House, Skinner Lane, Leeds LS7 1AX. Telephone: (0532) 459453.

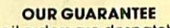


The screen pictures show the BBC Micro versions of the games.



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